Department of Social Research
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# Groups as Epistemic Communities–Studies on the Role of Groups in Forming and Circulating Social Knowledge

**Miika Vähämaa**

ACADEMIC DISSERTATION

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In Tampere, 21st of May 2015,

Miika Vähämaa

# Abstract

This dissertation presents studies on how social groups define and influence knowledge. The goal is to better understand the extent of group influence on the construction of *knowledge*. For the analytic purposes the group is conceptualized as an epistemic community–that is, a community that circulates and regards some things as credible knowledge based on its own idiosyncratic criteria. An epistemic community, it is argued, can be any social entity that serves some specific goal such as a professional goal (i.e. journalists working towards a story) or just a general social goal such as sociability (i.e. a group of friends spending time together). Such an epistemic community sets social standards for what is understood to be knowledge. Typically communities adhere to some ultimate goals–a social goal of unity, for instance–which are collectively accepted and not only direct the actions of the group but also have an epistemic function by setting the basic rules of what is to be regarded as knowledge. Most powerfully, this hypothesis of the function of goals as epistemic standards of the in-group is demonstrated in political communication with an international analysis of 2,090 Western European politicians and political journalists.

The conceptual analysis (articles I and II) presented in this dissertation is substantiated with three empirical papers that examine different epistemic communities, namely, groups of students formulating their definitions of mathematics in Norway and Finland (n=239; article III), citizens in the USA (n=1,263; article IV) evaluating their interest in science, as well as political journalists and politicians in nine Western European countries (n=2,090; article V). The results of the analyses show how groups influence members' knowledge and ways of knowing on academically, societally and professionally important topics, not only through deliberate individual and collective efforts towards knowledge (i.e., in-group conversations) but also as a side-product in the pursuit of group's social goals. In essence, a group's professional and social goals can act as a foundation for idiosyncratic social knowledge. This process is conceptualized as the formation of group epistemology.

The fact that people arrive at, what they conceive to be, knowledge with such ease in social life is regarded as a central, though overlooked, aspect of the social psychology of knowledge. People are generally well-equipped to engage in conversations in which they acquire and circulate knowledge. The

ease of acquiring knowledge through social interactions is discussed as the "epistemic calculus of groups"–the intelligible but natural social process in which individuals as group members both intentionally (via deliberation and choice) and unintentionally (via group socialization and conformity) acquire and circulate knowledge on various topics. The core aspects of the epistemic calculus are the following: a felt sense of being rational in the eyes of the self and others, a felt sense of being accepted as a group member, and a felt sense of being able to pursue desirable outcomes for oneself and for other in-group members. It is thought that by merely pursuing these personally relevant and felt senses the individual automatically acquires knowledge.

Despite its ease and sociability, the epistemic function of a group can make it extremely difficult for an individual to change opinions on something that is already held as credible knowledge in one's social circles. For instance, individuals may not be aware of the degree of influence of their in-groups on their thinking. As the data from Norway and Finland (article III) suggests, students can understand even mathematics very differently not because of the differences in their skills, aptitude or schooling systems but due to differences between the cultural groups in which they have formed their notions of mathematics.

Even more surprisingly, the data collected from nine Western European politicians and political journalists suggests (article V) that even professionals that work with journalism and professional communication on a daily basis may not be aware of the extent that their professional communities influence their thinking. Public professionals across nations portrayed similarity of thought with regard to their communication goals to a highly unlikely degree; these goals are the makings of the political knowledge as it is portrayed to the citizens across Europe. It seems that groups' powers of orientating knowledge far exceed the everyday intuition. The data from the United States (article IV) showed that even those group variables that would not be expected to influence thinking at the individual level can be powerful predictors of how people tend to view science and its relevance to society at large. Taken together, this dissertation's conceptual and empirical findings suggest that if efforts are made to shift individual or public understandings of matters that involve knowing and knowledge, social groups are strikingly important place to begin such efforts.

# Tiivistelmä

Väitöstutkimus koostuu viidestä artikkelista (kahdesta teoreettisesta artikkelista ja kolmesta empiirisestä osatutkimuksesta) ja yhteenvedosta, jotka tarkastelevat sosiaalisten ryhmien merkitystä tiedon ja tietämisen muodostumisessa. Työssä tarkastellaan ryhmien sosiaalisia funktioita ja näiden vaikutusta ja yhteyttä tiedon ja tietämisen rooliin osana sosiaalisten ryhmien arkea. Tutkimuksessa sosiaaliset ryhmät käsitteellistetään episteemisinä yhteisöinä – ryhminä, joissa tietoa ja tietämistä tuotetaan osana ryhmän muita arkisia tai ammatillisia käytäntöjä.

Tutkimuksessa osoitetaan, että mikä tahansa ryhmä – perheyksikkö, jalkapallojoukkue, opiskelijayhteisö, kansainvälisen politiikan huipulla toimiva työyhteisö – voi toimia tehokkaasti tietoa ja tietämisen tapoja tuottavana sosiaalisena yhteisönä. Mainitut esimerkkiyhteisöt eivät usein tähtää ensisijaisesti tiedon tuottamiseen, vaan pikemminkin luomaan puitteita ihmisten keskinäiselle vuorovaikutukselle, oppimiselle ja työlle. Tietoa ja tietämisen tapoja syntyy ikään kuin sivutuotteena: vanhemmat opettavat lapsille kieltä ja kulttuuria, pelikaverit hyviä syöttötekniikoita, opiskelijat vaihtavat ajatuksia lukutekniikoista ja työkaverit antavat vinkkejä hyvistä käytännöistä. Sosiaalinen kanssakäyminen ja sen yhteydessä syntyvä tieto sulautuvat yhteen. Näissä vuorovaikutuksissa luottamus ja auktoriteettiasemat saavat aikaan sen, että se, kehen luotetaan sosiaalisista syistä, voi toimia samalla luotettavana tiedon lähteenä.

Tutkimuksessa koostetaan kirjallisuuden pohjalta synteesi "ryhmien episteemisestä kalkuluksesta", jossa määritellään tiedon tuottamisen kannalta oleelliset ryhmäprosessit. Itseluottamus, hyväksytyksi tuleminen, kokemus oman järjen käytöstä ja pyrkimys lyhyen ja pitkän aikavälin onnellisuuteen luovat teoreettisesti koherentin mutta silti ryhmien kannalta käytännöllisen agendan tiedon tuottamiseen. Tätä teoretisointia sovelletaan empiirisissä osatutkimuksissa.

Sosiaalisten normien ja tiedon normien yhteenkietoutuminen näkyy hämmästyttävällä voimalla kansainvälistä poliittista eliittiä yhdeksässä Euroopan maassa (Suomi, Ruotsi, Tanska, Saksa, Ranska, Espanja, Slovenia, Itävalta, Sveitsi) vertailtaessa (artikkeli V). Yhteensä 2090 poliitikkoa ja politiikan toimittajaa tarkasteleva osatutkimus osoittaa, että ammattillinen sosiaalis-

tuminen ja normittuminen tietämisen tavoissa voi ylittää maiden ja kulttuurien rajat.

Esimerkiksi poliitikko Pariisista ja Helsingistä on omaksunut työnsä normien kautta samankaltaisen tavan käsittää poliittinen tieto, mikä on ratkaisevalla tavalla erilainen verrattuna ranskalaisen ja suomalaisen politiikan toimittajan käsityksiin. Kiinnostavaa on, että ilman suoraa vuorovaikutussuhdetta myös ranskalainen toimittaja ja suomalainen toimittaja hahmottavat tietoon liittyvää sosiaalista todellisuutta hämmästyttävän samalla tavalla. Haasteeksi muodostuukin eri ammattikuntien keskinäinen viestintä, jossa tietämisen lainalaisuudet mielletään eri tavoin.

Toinen osatutkimus tarkastelee suomalaisten ja norjalaisten yliopisto-opiskelijoiden (n=239, artikkeli III) käsityksiä matematiikasta. Usein melko universaaliksi mielletty matematiikka ja siihen liittyvät uskomukset osoittautuvat kahden kulttuurin vertailussa hyvin eri tavalla hahmotettavaksi ilmiöksi. Norjalainen opiskelija mieltää matematiikan keskimäärin enemmän konkretian kautta (laskutoimitukset, lukumäärät) kun taas suomalainen opiskelijakollega näkee matemaattisen tiedon abstraktimmin (matematiikka mielletään ajattelutapana). Kiinnostavaa on, että aineistossa sukupuolella ja koulumenestyksellä ei ollut tilastollisesti merkitsevää yhteyttä tapaan hahmottaa matematiikka. Sen sijaan kulttuuriset viestintätavat – sosiaalistuminen oman kulttuurin episteemiseen yhteisöön – näyttävät korreloivan vahvasti opiskejoille tyypillisten tietämisen tapojen kanssa. Kolmannessa osatutkimuksessa (artikkeli IV) tarkastellaan survey-tutkimuksella (n=1263) amerikkalaisia sosio-ekonomisia ryhmiä ja näiden kategoristen ryhmien yhteyttä mediankäyttöön ja kiinnostukseen tiedettä kohtaan. Tutkimuksessa selviää, että sosio-ekonomiset ryhmät sosiaalistuvat – kultivoituvat – mediatottumustensa kautta tietynlaisiin tapoihin lähestyä tiedettä ja kiinnostua siitä. Tulokset vahvistavat käsitystä siitä, että myös melko löyhä sidos laajempaan viiteryhmään voi osaltaan toimia yksilön siltana episteemiseen yhteisöön, jossa tiede ymmärretään samalla tavalla.

Kaiken kaikkiaan väitöstutkimus osoittaa, että sosiaaliset ryhmät toimivat sekä suoraan että epäsuorasti yksilön tietolähteinä ja luovat vahvan sosiaalisen merkityksensä kautta tiedon standardeja niin työhön kuin arkeen. Mikäli tietoa tai tieteellistä ajattelua halutaan yhteiskunnassa vahvistaa ja edistää, tulee sosiaalisten ryhmien voimakas, joskin usein sivuutettu, episteе-

minen (tiedollinen) ulottuvuus nostaa nykyistä vahvemmin sosiaalipsykologisen keskustelun ytimeen.

# 1 Preface

This dissertation examines a number of topics with the overarching goal of learning more about how social groups define and influence knowledge. This may be an ambitious task so I will share a brief story from real life. The following took place just little while ago:

> "So you're writing a dissertation on knowledge? You mean knowledge like, 'hey, where are you?' "

> "Not exactly but something like that. It's more about how our many social groups and bonds actually–and curiously–make us work out what is credible and seen as knowledge. You know, even when you ask your buddy where he is, you already make an assumption that your question makes sense to somebody else beyond you. In the most fundamental sense the building of knowledge starts with using understandable language."

So I begin with the realization that the subject matter of this work, the role of knowledge in the social world, is already familiar to people due to their membership in a culture. The goal is to explicate the core functions of groups and to point out how groups can–without much notice, though in principle perhaps contrary to everyday thinking–set social standards for much of what we regard as knowledge.

While groups may have a latent, unnoticed, effect upon us, we see ourselves very much in charge of our chosen beliefs and approaches. This may be particularly true of knowledge, since knowledge as a word points to something that is somehow more than just a belief. Knowledge, as a perusal of any dictionary allows, as a notion does indeed have a special status. It tends to be connected with being aware of, and having familiarity with, something. It is also often described as something acquired through experience and training and conscious effort, in contrast to feelings and dreams that do not require any learned or conscious effort, for instance.

Yet, studies have shown for a long time that what is regarded as knowledge varies from one individual to another (Perry, 1970; Pirttilä-Backman, 1993). In light of this, a potential answer from an academic perspective to

my friend's question would have been to toss back the question. What do *you* mean when you talk about knowledge? In real-life situations (e.g., friends asking for help with homework, a coach explaining what needs to be known about the rules of soccer) and even in specialized academic work (e.g., chemists conducting lab experiments) that revolve around knowledge, we have an intuitive understanding or theory of knowledge *in general*.

Knowledge is rarely approached from the epistemological and conceptual viewpoint in the practical situations of life and what one means by the concept of 'knowledge' becomes just a part of everyday life. For most people, and most situations, this is sufficient. As Herbert Simon would say, we 'satisfice' in such situations. But for those with an interest in the conceptual in addition to the empirical, a more abstract question remains. If we think of casual everyday conversations that toss back and forth questions like "Where are you?" and "What time it is?", it is easy to see that these conversations carry alongside an obvious and reasonable structure for correct responses. "Knowledge" in these casual interactions need not be problematized since the questions being asked are commonplace and the knowledge they require is embedded in the shared social reality. It is easy, thus, to go pose and answer these questions without much reflection on epistemological justification. However, the picture changes as topics become more complex and the level of abstraction becomes greater.[1]

Had my friend asked me, say, about my views on climate change, the conversation would have evoked altogether different rules of justification, and required some initial and mutual understanding of what is meant by "climate change." Yet, necessarily, such an abstract topic would have still become understood in the social context of two friends–a small social group–who try to make sense of each other, have an established sense of trust in what the other is saying as well as a like or dislike towards the other as an individual,

[1] Smedslund (1988, pp. 7-8; 1997) points out that social science deals mostly with social objects of awareness and/or knowledge (e.g., meanings of things, ideas, concepts) that are dependent upon people, that is, things that do not exist in the natural world beyond people. In the natural sciences, the focus is placed on material objects that can exist without people. Smedslund (1988, pp. 7-6) posits in *Psycho-Logic*: "In everyday life, one may frequently ignore the distinctions between the material, the social, and the subjective because of the high correlations between them. In this work, whose topic is conceptual analysis, the distinctions are important."

and have the ability to have an intelligible conversation, and so on. The social group that enables conversations to happen has a social structure that not only influences the choice of topics of conversations but provide a process in which attributes like social trust, reciprocity, sensibility and sociability step into the picture. So, from the viewpoint of social psychology, the overarching research question of this dissertation is:

> How do the social forces that are so important in social groups translate into epistemic influence on the individuals who make up those groups? In other words, how do groups allow individuals to hold something as 'knowledge'?

This is not a new query, and the notion of knowledge has been of interest in philosophy for a long time. The ties between knowledge and logic provide an important starting point for any reflection on what knowledge might mean.

Traditionally, however, interest in logic has been in separating social influences from pure reason in the attempt to arrive at a clear-cut definition for knowledge. In 400 BC, Plato defined knowledge as a *justified true belief* (Audi, 2010). The philosophy of knowledge, or epistemology, has advanced dramatically since Plato, while analytic philosophy has generated abstract formulations of logic to exemplify what "justified true belief" ought to, or does, mean (Audi, 2010; Goldman, 1999).

Yet, from a social psychological viewpoint, "justified," "belief" and "true" are bound to social reality and, in particular, to the social groups through which we justify, believe, endorse and seek truth. Thus, from the viewpoint of the social psychological approach taken herein, the world of knowledge is not entirely conceptual (as it is understood to be in philosophical logic) but it is neither merely empirical.

# 2 Introduction: Metatheoretical Premises

What, then, is knowledge? To talk about knowledge in the theoretical sense brings the discussion immediately to the concept of "logic." The main reason for this is that communication itself requires adherence to at least some basic

rules of grammar in order to avoid logical contradictions and illogical nonsense, as well as to form reasoned sentences. Hence, any spoken effort is, for reasons of principle, tied to logic. Yet, logic in its formal sense is a different story, which will be discussed later.

It is because of language that we can generally hold that humans are logical, that is, to the extent that they can communicate and make sense of each other, and thus, basically be rational actors in the world. In the present work, I take these axiomatic assumptions as derivatives of common culture, shared language and its semantics and common sense, following Jan Smedslund's *psycho-logic* (Smedslund, 1988, pp. 5; 1997; 2012, pp. 295-297) as well as Jürgen Habermas' theory of communicative action (Habermas, 1984, 11; Habermas, 1994, pp. 111).[2] Logic, in accordance with these theories, is in its formal sense, an extrapolation and explication of logical structures already present in natural languages.

In Smedlund's psycho-logic this idea is demonstrated through logical formalizations of language and common sense in the form of propositional psycho-logic, which according to Smedslund is built upon knowledge inherent in culture and language (Smedslund, 1988; 2008; 2012). Yet, when presented formally, the face of logic looks quite unfamiliar to most of us. We are more accustomed to seeking reason through natural language in everyday communication by entering conversations and treating fellow communicators as reasonable, and being able to utter valid and truthful sentences (Habermas, 1984, pp. 116-117).

As I proceed in this thesis to look at how we might research "knowledge" and its bearings in group contexts, I work with the assumptions made by Smedslund and Habermas who treat language and common sense as types of *a priori* knowledge held by individuals before they enter any particular conversation or particular act of making sense of the world. At the metatheoretical level, the task of the researcher is to explicate, as Smedslund (1988, pp 5-6) suggests, the function of common sense and logic built into communica-

[2] While Smedslund's psycho-logic makes these important metatheoretical points, the theory of psycho-logic itself is in my view a middle-range theory that subsumes a vast number of psychological theories. By so doing, the middle-range theory provides a combination of theoretical structure, a system of formal axioms and propositions to improve the cumulativeness and coherence of psychology.

tion. Smedslund (1988, pp. 6; 105-105) explicated the psychological common sense and common knowledge in the form of formal logical propositions, while Habermas (1984) built a conceptual synthesis of Western rationality by reviewing social theory and philosophy, and suggesting a synthesis that he calls the theory of communicative action.

Given that language and culture provide individuals and social groups a general sense of logic and reason, I proceed to look at the role that social groups play in the acquisition and circulation of *a posteriori* knowledge–that is, knowledge acquired through experience. I first analyze (in articles I and II), by the means of conceptual summary, some of the key a priori features of knowledge-production that social groups must have and then move on to explore (in articles III, IV and V) the group's function in knowledge acquisition and circulation empirically.

## 2.1 Implicit Social Influence of Language

The working assumption is that social groups influence knowing through important implicit mechanisms (i.e., reinforcing the use of familiar language and providing a platform for shared common sense), which may seem obvious and commonsensical to in-group members but foreign and unreasonable to the out-group.

How difficult might it be, you might wonder, for an individual or group to acquire new knowledge in a world in which common sense and language are already known, and set the basic rules for reasonable thought to occur? In his main epistemological contribution, Piaget (1972) suggests that knowing something new takes place in the context of what is already known as common sense and through using natural language. New knowledge, thus, is constructed in constant interplay between existing schemes and new ideas. Existing schemes, Piaget (1972) states, both limit and enable the prospect of learning something new. As Smedslund (2012, pp. 296) sums up:

> Accommodation to the world (learning) takes place only in relation to what is already assimilated. In other words, we can learn about the regularities of the world only in the way we interpret or understand it at the given time.

Acquisition of new knowledge, thus, is limited by what is already known and what is already taken to be reasonable. Awareness of the social mechanisms that influence our knowing allow individuals and groups alike to explicitly scrutinize the social influences involved in knowing when attempts to learning and change are made. The goal herein is to explicate the social mechanisms that drive knowing in group contexts. Explicating is done by proposing a theoretical synthesis of how knowledge is typically aqcuired and circulated in group settings by first formulating the core social properties involved in such processes as "the epistemic calculus of groups" (Article I & II, Vähämaa, 2013a, pp. 14; Vähämaa, 2013c) and then, in three papers, using empirical data to examine categorical groups in some specific contexts as providers of group knowledge and group epistemologies.

In the empirical analyses of the current work, the goal is to explicate how social processes of culture and attitudes (the cross-cultural study of mathematics perceptions; Article IV), cultivation (the study on the cultivation effect and interest in science in the US population context; Article V) and sheer professional group membership (the cross-national study of politicians and political journalists; Article VI), influence people's knowledge and how these processes create group epistemologies. Different contexts add value to the study, as Goldman (2010) suggests:

> It seems clear that if social epistemology is to invoke group belief and group knowledge, it should be prepared to deal with many types of groups or collectivities and many conceptions of group belief and knowledge. One size will not fit all.

The context of the study varies from Norwegian and Finnish university lecture halls to political communication among the European political elite. Knowledge, as a key concept to work with, is understood across domains as a belief that has a specific social status that differentiates–as the distinction in everyday language suggests–knowing from other types of believing, opinions, and so on (Wierzbicka, 1996).[3]The word knowledge, treated herein as a generic and common-sense concept, is defined as a belief or set of beliefs understood as knowledge by in-group members and, thus, treated with the

[3]Wierzbicka (1996) suggests in her work on semantic primes, a sort of alphabet of human thought, that the notion of knowledge is one of the universal mental predicates.

status of "true" knowledge rather than with the status of opinion or mere belief (Bergin, 2001, pp. 376; Bloor, 1976, pp. 2-3; Vähämaa, 2013a, pp. 4-6). As David Bloor (1976, pp. 2-3) puts it, a good working definition is that knowledge is "whatever men take to be knowledge ... what is collectively endorsed."

## 2.2 Knowledge as a Public Good

Knowledge, from the given viewpoint, is a concept that makes sense when it is socially shared and given the status of knowledge through dialogue with others. In a social setting what becomes held as knowledge is often an implicit process that relies as much on social attributes, like a sense of mutual trust between the conversationists, as more explicit discourse in which different views and statements can be analytically reviewed. In any event, however, the social dimension is important. No knowledge in a public sense of the word can exist in the isolation of an individual mind. What becomes held as knowledge is, therefore, always dependent upon the social status given to a belief by a group of people who regard something as knowledge.

As such, the concept of knowledge can subsume a range of topics, but knowledge from the subjects' viewpoint is nonetheless something held as valid, likely and even true. All this is in contrary to a view in which knowledge is an end-result of a very sophisticated pursuit of a keen individual mind that has acquired knowledge through some specific epistemological golden standard. This definition of knowledge is more vague than many epistemologists would allow (e.g., Goldman, 1999; Kitcher, 2002) but relevant in this particular context where epistemology is studied from a social psychological point of view.

## 2.3 Levels of Theory Building

Building on Robert Merton's (1949) classic typology of levels of theories, I view the main theoretical contribution of the present work–explication of the epistemic calculus of groups–as a middle-range theory. Table 2.1 presents the levels of theories and gives examples (following Merton 1949) of theories present in the current work.

*Table 2.1 Levels of theory building, roles of theories and examples of theories*

| Level of theoretization | Role of theory | Example of a theory in the context of present thesis |
|---|---|---|
| **Specific theory** | To present and test a specific empirical hypothesis | The elaboration likelihood model (ELM), refrective judgment model, idiosyncrasy credit, need for cognitive closure, cultivation theory |
| **Middle-range theory** | To develop more general conceptual scheme adequate to consolidate groups of special theories | The epistemic calculus of groups, social representation theory, psychologic |
| **Metatheory** | To present non-empirical and axiomatic theory of social life | Social epistemology, theory of communicative action |

Table 2.1 points to a division of labor in theory building that is helpful in two ways. First, it allows the researcher to situate research within the work already done in the field and reflect on the different ideas and approaches presented in specific, middle-range and metalevel theory building. Second, in the context of knowledge research, explicating the levels of theory building help underline the normative direction–the statements of how things should or ought to be–inherent in one's own scholarship. In specific theories, for instance, such statements are typically bound to the methodological adequacy and accuracy. Empirical social research typically operates with specific theories that are aimed at some particular social problem or theme. However, higher up on the theoretical ladder it becomes more apparent that every methodological choice has also some philosophical implications of how the meaning and nature of the results is to be understood. [4]

The notion of a need for cognitive closure is one example of a prominent theory in the social psychology of knowledge (Kruglanski et al., 2006). The theory makes specific assumptions of how an individual's need for closure–a

[4]For instance, in ELM theory, the common checkpoints for researchers are the validity and reliability of the experimental or quasi-experimental studies. The nature of experimental work itself goes unquestioned, whereas in comparison, in the middle-range theory of psycho-logic, there is a lot of discourse about the epistemic implications of research methods and of the nature of human thought as a topic of study.

need or tendency to have clearly defined knowledge–drives individual patterns in forming knowledge and, as a by-product, shapes what becomes held as knowledge in social groups and eventually society at large (Kruglanski et al, 2006; Kruglanski et al., 2010). While larger implications are discussed as consequences to the societal discourse, theory building itself is very focused on a specific argument on the need for closure and its empirical validity in data analysis (Kruglanski et al., 2010).

At the middle-range level of theory building, normative argumentation is often used, and the philosophical connections of the theory tend to be explicated. Social representations theory, for example, is presented as being conducive to social change for the betterment of human life and has thus a clear normative agenda (Moscovici, 1973, pp. xvii). In a similar vein, Smedlund's psycho-logic synthesizes a number of specific theories of psychology in a single model of analysis at a middle-range level of theory building, presenting an outspoken normative attempt to redefine the overall task of psychological research as a nonempirical project (Smedslund, 1988, pp. 6).

## 2.4 Two Types of Normativity in Social Epistemological Research

The metatheoretical level operates with nonempirical and philosophical claims that are fundamental in their nature and thus do not have direct relations to specific theories. Rather, metatheories provide the philosophical backdrop that informs middle-range theories and help as a way to evaluate the validity of the synthesis built in to these theories.

The papers presented in this thesis are informed by at least two metatheoretical approaches: Habermasian communicative action (Habermas, 1984) and Fuller's social epistemology (Fuller, 1988). The theory of communicative action posits the fundamental idea that people necessarily and implicitly rely on reason when they communicate (Habermas, 1984, pp. 99-101). Communicative action is the axiomatic idea that the underlying structure of language creates the conditions in which specific sentences make sense or do not make sense from the viewpoint of those who are present in a given social situation (Habermas, 1984, pp. 101). As such, it can be observed in the empirical rea-

lity but not falsified in the same sense as a specific theory since it is not a specific empirical claim but rather a claim of an overall mechanism of communication.

Social epistemology, as defined by Steve Fuller, is the philosophical and sociological study of knowledge in the social world, which also provides a normative account of the purpose and benefits of knowledge to society and the individual (Fuller, 1988, pp. 3; for a review see Remedios, 2003, pp. 20-27). The underlying assumption in Fuller's social epistemology is the axiomatic view that when knowledge is being studied it automatically raises the issue of normativity. Namely, how should knowledge be organized as a societal project? Who has the most epistemic authority now and in future? Who gets what in the pursuit of knowledge? Who benefits from the current social structure in which knowledge becomes to make sense?[5]

These above questions represent an abstract type of meta-normativity that comes with reflective research and from a focus on the overall project of knowledge. In addition to this type of overall view of normativity, or meta-normativity, the social processes involved in knowledge acquisition and circulation are guided by social norms as well. This type of real-life social normativity that occurs in social interaction due to social customs and habits is tapped into in the articles of this thesis (for a distinction between meta-normativity and normativity in interaction see Table 2.2).

## 2.5 Lay and Research Conceptualization of Knowledge

Table 2.2 depicts the different functions of the more abstract meta-normativity and normativity in social interaction, as seen in the contexts of the present work. The figure points out that both the researchers' (i.e., the meta-

[5]For Fuller these questions are important since they point out that knowledge is a social practice that has social ends that can be evaluated empirically (i.e. research funding goes to one group and not to another, some beliefs are incorporated in the school science curricula and others not, etc.). Goldman's rival view of analytic social epistemology suggests that knowledge is primarily tied to non-empirical assessment in which the value of knowledge is evaluated with regard to some abstract ideal, such as truth, whose relevance in social life necessarily outweigh the empirical concerns raised in Fuller's program. (For a concise review of this debate see Goldman, 2010)

normativity view) and those being researched (i.e., lay peoples' normativity of interaction) must have some idea or conceptualization of knowledge. That conceptualization is, as Fuller suggests, not natural or purely theoretical, but driven by the norm-building social forces in academia and the social world (Fuller, 1988).

*Table 2.2 How is normativity present in conceptualization and communication of knowledge? Rough dividing lines between researchers and group members*

| Basic questions of social epistemology | Researcher | Social group member |
|---|---|---|
| How knowledge is conceptualized? | Knowledge is explicitly conceptualized for research purposes | Knowledge is not explicitly conceptualized but implicitly acquired and circulated via social interaction |
| What are the rules of communicating knowledge? | Academic norms which are explicit and require demonstrated and written compliance | Social norms of trustworthiness and sensibility which require social credibility |

As Table 2.2 posits, there is a natural discrepancy between researchers' and research subjects' viewpoints. A researcher has a duty to explicate how she or he conceptualizes knowledge. Social groups, on the other hand, have many more degrees of freedom in how knowledge is understood. Commonly, as the Table 2.2 suggests, knowledge is not explicitly conceptualized but rather acquired and circulated as a kind of spoken matter–sentences are being stated and, in turn, become understood as knowledge within the group. Social norms factor in when attempts at communicating something as knowledge are being made. A researcher is also a social group member, even though when it comes to knowledge the rules of communication are quite explicit. Norms of academia set boundaries for the researcher. For an imaginary social group member, on the other hand, there are less outspoken rules. One needs to be able to make sense and gain trust within the group in order to communicate knowledge. Once there is trust, there is an open pathway to communicate something as knowledge.

These assumptions are elaborated in both the theoretical and empirical papers of the present work. In these articles the focus is on the side of social group members. Making sense and gaining in-group trustworthiness are seen as social norms that give knowledge its social nature. The explication of these social processes is seen as producing academically normed knowledge, or meta-normative knowledge, on both how and why groups rely so much on social forces even when it comes to knowing. The researcher, from this view, is by definition obligated to explicate the norms by which knowledge is acquired and circulated. Social groups, in contrast, exist for their own sake, and acquire and circulate knowledge as part of their natural interaction.

### 2.5.1 Definitions in Epistemology

Speaking of explication raises the need for some other definitions of terms in an area of knowledge. Epistemology is a term I use to refer to the scientific study of knowledge in general. By *epistemic*, I mean that something is related to knowledge or is conducive to knowledge. Epistemic standards are the idiosyncratic group-based social rules of knowing that, when explicated, define the core properties assigned to knowledge. Taken together the epistemic standards form what I call group epistemology.

Group epistemology and lay epistemology[6], importantly, are terms I interchangeably use to define the social rules and goals of a given group that allow a group member to treat some beliefs as knowledge and others as opinions or mere beliefs. Having knowledge-inducing qualities, the group or lay epistemologies, then, are conducive to epistemic communities. Epistemic communities are social groups that have similar group epistemologies and, for this reason, such a community holds similar types of beliefs as knowledge. The concept of a social group is discussed in more detail in the section *The Importance of Social Groups.*[7]

[6] In Article III the terms "social epistemology" and "group epistemology" are, exceptionally, used interchangeably. In this context they are both understood as the social rules for knowledge.

[7] All of these terms can spawn a number of connotations for the reader. Some of those may relate to some specific theory or understanding of the word familiar to the reader and other to some grand philosophical theory not mentioned in the thesis. In such a situation it may be helpful to reflect on how these insights relate to the presented levels of theories and how they may, then, relate to the aspects presented in the epistemic calculus of groups.

# 3 Conceptual Tasks, Research Questions and Methods

The following table (Table 3.1) presents the conceptual and informative tasks, research questions and methods that constitute the articles.

The conceptual tasks listed in the Table 3.1 highlight the importance of social groups in the formation and circulation of knowledge. It is important to note that while logic is a metatheoretically relevant notion, the papers pay no particular attention to the workings of logic or scientific language in the group context. Rather, the focus in on the knowledge-conducive social functions of groups.

Table 3.1 shows that, in addition to theory-building made in the articles I and II, the focus is on the empirical study of large categorical groups and their latent function in acquiring and circulating knowledge. The first empirical paper taps into the epistemic communities built around perceptions of mathematics (Article III). The second empirical paper studies large-scale group epistemologies seen as results of the cultivation effect (Article IV). Finally, the third empirical paper studies politicians and political journalists and how they form transnational epistemic communities that transcend national cultures.

Since the papers of this dissertation start with assumptions of common sense and logic built-in to our language, it is important to consider how actual formal logic works. The word "logic" is used in a number of casual ways. To be more clear, I want to first show, in the following section, what propositional logic looks like. Then, I will examine whether or to what degree people in social interaction meet these definitions of "logic."

Naturally, the approaches presented here are not exhaustive and are not even meant to be; consequently, they would benefit from further conceptual work as well as further empirical explication of specific theoretical assumptions.

*Table 3.1 Summary of conceptual and informative tasks, research questions and methods used in the thesis*

| ARTICLE | CONCEPTUAL AND INFORMATIVE TASKS COVERED IN THE ARTICLE | RESEARCH QUESTION(S) | METHOD |
|---|---|---|---|
| I | Present the theory of "epistemic calculus of groups". | What social and affective factors are conducive to knowledge in group contexts? (Vähämaa, 2013a, pp. 4) | Middle-range theoretical analysis |
| II | Argue for the axiomatic role goups have in formation of knowledge. | Why social groups are necessary for the individual in attaining knowledge? (Vähämaa, 2013b, pp .28) | Middle-range theoretical analysis |
| III | Explication of different perceptions of mathematics as aspects of epistemic communities in Norway and Finland. | **I.** What are, in our sample, the perceptions of mathematics like? **II.** To what extent do these perceptions differ in Norway and Finland? **III.** To what extent doperceptions of mathematics andits applicability in life predict attituetowards mathematics? (Vähämaa & Härmälä, 2011, pp. 75) | Regression analysis |
| IV | Conceptualization of cultivation effect and group membership as aspects of group epistemology predicting interest in science. | **I.** Do similar aspect of socio-economicstatus and media choice alter opinions concerning science per se? **II.** Does an individual's preferred medium for information change the appeal of important topics like science? (Vähämaa & West, 2014, pp.11) | Factor analysis and regression analysis |
| V | Conceptualization of politicians and political journalists as members of distinct epistemic communities that provide knowledge to the public sphere. | **I.** Do professional politicians and political journalists form a singular epistemic community that consists of reciprocally understood goals? **II.** To what extent differences/ similarities of goals are cross-national across nine countries? (Vähämaa & West, 2014, in print) | Multiple group SEM confirmatory factor analysis |

# 4 Are We Logical or Not? An Example of Propositional Logic

Psychologists have come up with a cunning test–the Wason (1966) card selection task–to illuminate formally logical (i.e., propositional logic) thought put into practice. With the task a person can be tested on deductive reasoning that builds on propositions.

## 4.1 The Wason Puzzle

Here is the task:

> Assume that you are shown a set of four cards placed on a table, each of which has a number on one side and a letter on the other side. The visible faces of the cards show E, 4, K and 7. Which card(s) must you turn over in order to test the truth of the proposition that **if a card shows an even number on one face, then its opposite face has a vowel on it**?

Now, think of the problem for a moment before reading the following formal logical solution. Using both the formal language (in braces) of propositional logic and common letters and numbers, the card puzzle could be displayed in front of you as follows:

Which of the following card(s) do you need to turn over to prove the statement "if p then q?"

> 4 (p), 7 (not-p), E (q), K (not-q)

To an untutored eye an expression like "not-p" or any of this type of formalizing makes little, if any, sense and does not help to solve the task. Propositional logic in its formal sense is obviously a matter of training.

### 4.1.1 Solving the Puzzle

Let us see how the puzzle may be solved with the aid of propositional logic. Ilpo Halonen (1997, pp. 227-232) unwinds the problem stating that the correct

answer is to turn cards 4 and 7, since only these cards can ultimately *falsify* the proposition in the Popperian manner. Falsifying builds on the following logic: Since a vowel must follow an even number, the card with number 4 needs to be checked. Typically, people get this right. Where things become less intuitive is that there is really no need to check the card with E, nor does one need to check if K is followed by an even number. Why not? Because the proposition allows that E–a vowel–can be paired with an odd number as well.

So turning the card E upside down does not falsify the proposition if it is followed by an odd number. The same logic holds for K. Our proposition also allows that a consonant can be paired with an even number as well with an odd number. Thus, it does not matter if K is matched with an odd or even number. What does matter in the proposition is that if an odd number is paired with a vowel, the proposition cannot be correct. So, if a card with number seven on it has a vowel on the other side of it our propositional logic–as a consequence–fails and proves to be *untrue*.

You are not alone if you find this solution to the puzzle unsettling–or just simply more complex than intuition would allow. It is an empirical fact that people are not generally well suited to solving logical problems when they are presented in such an analytical form. Indeed, in empirical studies, people usually fail to choose the right cards in the Wason selection task (Halonen, 1997). As the example shows, propositional logic provides a robust way of assessing a correct pattern of reasoning for tasks that are (a) propositionally presentable, and (b) not dependent on opinions and deliberation via dialogue.

Therefore, propositional logic is well-suited to work on tasks even in group settings as long as the task is *a priori* defined and isolated as a logical problem in need of logical decision-making (Tindale, Kameda, & Hinsz, 2003, pp. 381-382). To arrive at correct answers requires both the acceptance of rules of inquiry (an orientation toward truth-pursuing via logic) and the rules of correctness (a conclusion can be only true or only false).

## 4.2 The Function of Error

To arrive at the wrong answer would indicate a failure to use the logical rules correctly. In attempting to solve the card puzzle, an untutored person is

easily misguided in deciding which card to turn over. A tutored mind, studies show, would find it easier to assume an approach of falsification and compliance with propositions and, thus, reach the correct solution (Halonen, 1997). Truth, in the context of logic, is a fixed relation between propositions that build on things taken as givens–axioms. The end result is a solid linguistic system that allows people to objectively assess the relationships among propositions given a set of axioms. The aim of propositional logic is to provide a formal presentation of reasoning patterns and to come up with rules that tell when a proposition holds–that is, when it is true–and when it does not hold or is untrue.

It is easy to praise the effectiveness and simplicity provided by propositional logic; as the example suggests, formal reasoning is straightforward in its logical representation of the rules by which one may proceed to solve problems, since they are presented via clearly defined propositions (Cryan, Shatil, & Mayblin, 2001, pp. 3). But everyday experience tells us that the formal way is not how people generally reason.[8]

For the most part, people express themselves informally, using natural language and shared culture (Fodor, 1987; Habermas, 1984; Smedslund, 2012). We can, under normal conditions and to the extent of comprehensible language, use, see and detect informal reasoning intuitively wherever there is spoken and written language or communication via gestural language (Brandom, 1994; 2000; Smedslund, 2012). Such normal conditions also have unintentional elements. For instance, involuntary facial expressions have communicative functions but their role in creating meaning, in the words of Mats Bergman (2009, pp. 259), requires "a common ground of experience, whether emotional, practical, or intellectual, which suffices to identify objects of communication."

[8] Ilpo Halonen cites in *Järki* (Halonen, 1997) empirical studies showing that people are generally not good at solving abstract logical problems. Yet, people in the Western world are used to solving naturally occurring logical problems. These abilities, however, do not result in classic logical problem solving in every domain of social life. Typically, Halonen argues, people err in their language: "logical" should refer to propositional logic but people typically take "logical" to mean that something is *plausible/probable*.

## 4.3 Natural Language and Logic

As Robert Brandom (1994) suggests in *Making It Explicit*, the logic of the spoken, gestured or written language goes unexpressed and becomes only visible when explicated. For instance, humans employ logically non-expressive vocabulary (natural language) in making everyday observations and inferences–giving conceptual roles to things spoken of–all the time as they communicate. Brandom's (2000) example of non-logical versus logically expressive language clarifies this point. Saying or thinking that Matilda is a cow implicitly asserts that Matilda is an animal.

If a researcher uses logically expressive language, then the logic behind such implicit categorization is revealed, or explicated, and the researcher could write: "*If* Matilda is a cow, then Matilda is an animal" or "Cows are *not* horses or some other animals." Logically more formal and expressive use of language reveal the already assumed logical connectives and elimination rules that are present in more intuitive natural language. [9]

The explicated formal route, or logic, is present in our lives, too, but typically in more restricted domains. It is present in science where logical arguments are explicated and honed–both in the social and natural sciences. It is also often present in academic scholarship, as on these pages. But it is unusual in everyday life to see the use of formal logic.

Because of symbolic language we are bound to some form of logic, however. For instance, we categorize things as being of this and that kind, we attempt to avoid contradicting ourselves and, most of all, we differentiate

[9] The approach of conceptual role semantics assumes that the meanings of words per se determine what really is the nature of the phenomenon that is described by the concept through a priori logical use of language. For instance, the term "group" makes sense when used and simultaneously determines that a "group" is a social concept involving only socially understandable qualities. This viewpoint allows that the concept of a group is meaningful as a logical concept, without an attached ideological or other experience-based interpretation. This view contradicts the assumptions made in the sociocultural linguistic approach, in which nothing is seen as "merely logical" but everything is continually constructed in discourse (Bucholz & Hall, 2005). According to the conceptual role semantics, however, the concept of a "group" can acquire a conceptual role of its own in language: the concept itself has an innate determinant quality in language. A secondary ideological inquiry can utilize the concept by asking if, in a given context, the concept of a group is used to emphasize gender roles or to conduct some oppressive practice, and so on. (Whiting, 2014).

between nonsense and the syntactically sensible, that is, the correct use of English or other language (Brandom, 1994; 2000; Fodor, 1987; Wierzbicka, 2006). There is no ultimate escape for humans from communicative reason as Habermas (1994, pp. 111) suggests:

> First of all, I never say that people *want* to act communicatively, but that they *have* to. When parents bring up their children, when the living appropriate the transmitted wisdom of preceding generations, when individuals and groups cooperate, that is, when they work to get along with one another without the costly recourse to violence, they all have to act communicatively. There are elementary social functions that can only be satisfied by means of communicative action.

Natural language, thus, with its inherent logic, provides a framework in which knowledge can be created and a medium through which knowledge can be expressed and preserved despite the ever changing social situations with their unique contextual characteristics. As Smedslund (2008, pp. 160) summarizes:

> There must be invariant components in word meaning in order to explain the usefulness of languages and their function in social life. If words were completely transparent, that is, their meanings completely determined by context, the orderliness of social life could not be explained. Part of the function of language is precisely to ensure communication with little contextual support.

We can easily agree, I believe, that logic in its formal sense has its time and place, and it delivers formal analysis when needed. When it comes to a formal logical language, it is the explication of the logical rules of reasoning that differentiate formal logic from natural language. As Rudolf Carnap (1937) has proposed with his logical tolerance principle, there can be many theoretically sound, correct and acceptable formal logical languages living side by side–e.g., propositional logic, syllogisms, mathematical logic, even *fuzzy* logic–as long as the rules of logical reasoning were well-explicated. [10]

[10]Nowadays dozens of formal logics exists in the literature, most of which fall under the umbrella of classical logic. Fuzzy logic goes beyond classical logic but is nonetheless an extension of mathematical logic (Kosko, 1993). Common to these approaches is the

### 4.3.1 Limits of Logic

In sum, the notion of logic in its formal sense is too narrow to fully conceptualize the epistemic function of groups. From an epistemological viewpoint logic is a necessary ingredient in any conceptualization of knowledge production but it is the social processes that take place in groups that provide the meanings–the understandings held as reasonable. To argue that logic is the only meaningful social mechanism involved in creating knowledge in the social world would be to adopt the view of the early Greek school of Pythagoreans. As the sociologist and social epistemologist Steve Fuller points out (Fuller, 2013, pp.16):

> I agree that modern notions of intelligence are grounded in mathematical reasoning, understood as providing the foundations for logic. However, this would have been seen as quite extreme in ancient Greece, associated mostly with the Pythagoreans and Platonists.

It appears that people employ logic–if only implicitly–in their communication but they are not logical in their talk and actions in the classic and outmost formal sense of the term (I; Vähämaa, 2013a, p.4). In other words, humans do not generally use in casual communication the formal logic that an analytic philosopher would prefer; humans communicate intuitively and use informal reasoning in their day-to-day interactions (Smedslund, 2012; Habermas, 1984).[11] People matter in the epistemic process probably more than we would expect. The role of people's informal and social influence on knowledge-formation is explored in this dissertation from the perspective of groups as epistemic units. Therefore, formal logical formulations, like the one presented with the Wason puzzle, are better understood as specific theories

formalization of rule-based reasoning. According to Carnap (1937, pp. 1): "A theory, a rule, a definition, or the like is to be called formal when no reference is made in it either to the meaning of the symbols (for examples, the words) or to the sense of the expressions (e.g. the sentences), but simply and solely to the kinds and order of the symbols from which the expressions are constructed."

[11] As a scientific group effort, even mathematics with all its formality is hard to study in isolation from social forces, as I will later demonstrate in Article III of the dissertation. At least there are socially driven perceptions of "logic" surrounding the camp of formal logic, too. For instance, socialization takes place among mathematicians and in a classroom where mathematics is taught. Logicians teach and encourage each other to learn to solve formal logical tasks, and seek out trustworthy mentors to do such teaching.

in the domain of knowledge when put into the context of levels of theories in the Table 2.1. However, once the social bearings of knowledge-formation have been better taken into account it is possible to move towards a conceptual–even logically axiomatic–summary of the epistemic function of social groups. This dissertation presents one such summarizing effort as the epistemic calculus of groups (I; Vähämaa, 2013a)–a conceptual synthesis that aims at being logically sound and consensual.

The task of bringing the various social strings together to theorize, empirically explicate and synthesize social groups as epistemic entities is based on a mixture of social psychology and philosophy. This is a daunting task. Even the renowned Susan Haack comes to the conclusion in her seminal *Philosophy of Logics* (Haack, 1978) that, when logic and psychology are at stake, no final philosophical solution is at hand. While an ultimate solution may not be achievable or even desirable, I do have a clear goal for my dissertation project. The purpose of this synthesis–and the articles in this dissertation–is to point out how social groups function as epistemic communities–communities that have shared goals, shared rules (whether implicit or explicit) for knowing as well as shared perceptions of what is held as knowledge.

# 5 The Importance of Social Groups

## 5.1 Defining Social Groups

Throughout the present work the social group is conceptualized in accord with social identity theory as a categorical entity in which group members are aware of their membership but do not necessarily directly interact with each other (Tajfel, 1982). By the terms in-group and out-group, I refer to Tajfel's (1982, pp. 2) idea that common beliefs and values are shared within the in-group and, in turn, are recognizable by those who belong to the out-group. The out-group, in principle, are those who do not belong to the in-group. The notion of in-group is flexible and can refer to all kinds of groups. It might refer to a family with a lot of reciprocal interaction on a day-to-day basis. Yet, a person may consider her/himself to be a member of an Internet chess club even though there may not be direct physical or even virtual interaction among the group members. The same goes for religious beliefs

and ethnicity; an in-group member may hold only a loose connection to the group as a whole but is nonetheless a group member.

According to social identity and stereotyping literature (e.g., Tajfel, Billig, Bundy, & Flament, 1971) it may, indeed, be possible that without direct interactions the group members may still experience the group as meaningful and as "real" as a membership with a group in which there is much direct social contact. For instance, culture and ethnicity may be viewed as the basis for large-scale groups. These groups cultivate group members' knowledge through subtle social influence, as seen in the Article III on the cultural influence on mathematics perceptions (III; Vähämaa & Härmälä, 2011). Likewise, socio-economic and ethnic groups may in part affect the interest in science, as posited in article V (Vähämaa & West, 2014). In accord with the social identity approach, membership in a virtual or imaginary group–such as a television program audience–counts as a group affiliation (Tajfel, Billig, Bundy, & Flament, 1971). Article V taps into this process and shows how different media use and exposure to the same type of mass media content is a good predictor of group beliefs at the aggregate level.

Whether or not direct interactions among group members is a prerequisite for the concept of group is a matter of continuing debate. Theorists in group dynamics tradition (Wilder & Simon, 1998), contrary to the view adopted herein, emphasize the role of direct interdependence of group members as a characteristic of a real social group (e.g., Cartwritgth, 1960; Krech & Crutchfield, 1948). According to these theorists, a group is a dynamic entity that needs to be understood through direct interaction within the group. However, there is recent empirical work in the field that attempts to bridge these two camps, arguing that definitions for "group" are as much tools for thinking about groups as they are real typologies for actual groups (Rutchick et al. 2008, pp. 908). Whatever the outcome of the group debates may be, it suffices here to rely on Henri Tajfel's (1982, pp. 2) definition (Vähämaa 2013a, pp. 5) since it allows for both categorical and dynamic interpretation of social groups.[12]

[12]The relevance of groups, regardless of the chosen definition, is known to us also intuitively. The very existence of groups is *a priori* tied to knowledge in the sense that group formation entails socially comprehensible signaling and communication. In short, social group formation requires knowledge of the *self*, of *other people* and of their *behavior* (Vähämaa 2013b, pp. 26-27). The importance of others is demonstrated through biological

## 5.2 Philosophical vs. Empirical Epistemology

In philosophy, epistemological theories address knowledge as a social entity and, by doing so, make claims about social reality which is the domain of empirical social research (Goldman, 1999; Audi, 2010). Traditionally, however, there is little conceptual overlap between philosophical epistemology as portrayed by Goldman (1999) and Audi (2010), and the study of epistemology as a social praxis as lay epistemologies (e.g., Kruglanski, 2010), personal epistemologies (e.g., Perry, 1970; Pirttilä-Backman, 1993) and epistemic communities (e.g., Haas, 1992; Knorr-Cetina, 1999). Both camps, the philosophical and the empirical, claim authority over epistemology as a social project.

By remaining nonempirical, the philosophical epistemology is not bound to the meta-normative commitments that come with empirical methodology. Yet, while philosophy addresses the significance of social forces in epistemology, it taps into social practices that are, by definition, normative in the interactive sense of the word, that is, they are build upon social norms (see Table 2.2).

Empirical social research, on the other hand, operates with concepts that have their own philosophical backgrounds and meanings. The worry, from the philosophical viewpoint, has been that purely empirical approach tends to neglect the fact that any conceptualization of knowledge is bound to be a meta-normative one. A failure to address the philosophical grounding of the chosen empirical conceptualization would be regarded as a failure to truly address epistemology–regardless of whether epistemology is seen as social or not (Fuller, 2002). The outcome of such an philosophical impasse has led to two basic approaches to social epistemology. [13]

and social research. We need groups to survive and fulfill various social and biological needs. A body of literature documents humans' need for other humans as constituents of groups, both biologically and socially (for a biological review see Bugental, 2000; Maslow, 1943, 1954; for a social review see Postmes & Branscombe, 2010; Sherif, Harvey, White, Hood, & Sherif, 1961; Tajfel & Turner, 1986; Turner, 1982).

[13] The aspect of meta-normativity is important to underline since it seems, quite unexpectedly, that many prominent studies in the sociology or social psychology of knowledge do not directly address the normativity of their work. Leading examples of constructivist studies of science represent Joseph Rouse (2002), Andy Pickering's classic *Constructing Quarks: A Sociological History of Particle Physics* (1984) as well as Karin Knorr-Cetina's (1999) work on the epistemic cultures of science. Rouse, Pickering and Knorr-Cetina do

Together, the camps of Fuller's social epistemology and Goldman's analytic social epistemology have the same goal: to better understand how epistemology–the academic study of knowledge–relates to social life. Fuller's (1988; 2002) social epistemology, however, is the broader of the two, encompassing both the study of analytic epistemology as well as empirical approaches. In Fuller's (2002) social epistemology, the question of the organization of knowledge is left to further research while in Goldman's approach (1999), the chosen standard method for epistemological analysis is given as truth-values derived via formal logic.

# 6 Review of Related Social Psychological Theories of Knowledge

In the following section, I outline the key features of the most relevant social psychological literature related to the present work that has contributed to our understanding of groups' role in acquiring and circulating knowledge. While considering each of the approaches, I make some meta-normative remarks; that is, I point out how the philosophical nature of knowledge is articulated in each of these approaches. Here, I use the term normative while addressing the meta-normative implications of these theories as I believe they are best understood within the research community (see Table 2.2 for a distinction between normativity for lay and research audiences).

Some of the approaches, such as the elaboration likelihood model, assume a little or no philosophical stand while others, especially lay epistemic theory, are open to promoting social change (as a meta-normative goal) based on empirical findings (for a review of some classic approaches see Bar-Tal & Bar-Tal, 1988).

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a good job in examining the social structure of the scientific knowledge production but leave open the question of the purpose and function of their analytic work. These authors seem to assume that the merit of their work is in the analytic deconstruction of scientific practices *per se*, without clarifying why such knowledge matters.

## 6.1 Kruglanski's Lay Epistemic Theory

Of the empirically oriented social psychological approaches, the most cited research program of *lay epistemic theory* (LET), led by Arie Kruglanski, runs very close to the approach taken in the present work (for reviews, see Kruglanski et al., 2010; Kruglanski et al., 2006). Kruglanski's research for the past 30 years has fallen under the umbrella of what he calls lay epistemic theory (LET) (Kruglanski, 1989). According to Kruglanski and colleagues, the research agenda of LET consists of three different *specific* theories: the need for closure theory, the unimodel theory and the epistemic authority theory (Kruglanski et al., 2010, pp. 939-940). In the author's own words (Kruglanski et al., 2010, pp. 939):

> The need for cognitive closure is an epistemic motivation that propels knowledge formation and has widely ramifying consequences for individual, interpersonal, and group phenomena. The unimodel investigates the process of new knowledge formation from the 'information given.' The work on epistemic authority highlights the centrality of social source effects, including the self as a source, in human epistemic behavior.

Thus, the starting point of LET is the individual mind and the subjective ability of an individual to rely on inference in which other people's epistemic credibility is evaluated and these social evaluations lend the process of knowing a *social flavor*. The approach is straightforward in arguing that knowledge in general terms is to be understood as the totality of logically acquired beliefs that uses different sources–emotional, social, and rational–as evidence. This unimodel theory, a subset of the LET, posits that all knowing is based on syllogistic inferencing, which may take place rapidly and without the individual's awareness. Kruglanski and colleagues highlight the routinization present in the process of evaluating the meaning of evidence in knowledge-formation and argue the following (Kruglanski et al., 2010, pp. 942):

> ...routinization removes the need for conscious control of the process, rendering awareness of the process superfluous. It is in this sense then that some judgmental phenomena, mediated by well-routinized IF THEN rules, may take place outside of conscious awareness. In brief, judgments are rule-based and in this sense,

> are derived from 'evidence.' To make a judgment is to go beyond the 'information given' (Bruner, 1973), by using the information as testimony for a conclusion in accordance with an 'IF THEN' premise to which the individual subscribes.

## 6.2 Group-centrism and Knowledge

Recently, Kruglanski and colleagues have made an attempt towards a middle-range theoretical synthesis based on a number of theories on group behavior and the need for cognitive closure (Kruglanski et al., 2006). Under the notion of *group-centrism* Kruglanski and colleagues (2006) attempt to combine various group processes and the need for cognitive closure into a single theoretical construct. The idea is that individuals' needs for clear and persistent perceptions of knowledge lead individuals to engage in a number of group-specific social processes that alleviate the process of cognitive closure. Group, according to Kruglanski's group-centrism thesis, is then used by the individual to disseminate one's own true beliefs within the in-group.

Kruglanski and colleagues suggest that a better understanding of the role of knowledge in our modern times would require the collaboration of social scientists more than ever (Kruglanski et al. 2006, 97):

> The body of work reviewed in the preceding pages suggest that major geopolitical event that have been shaping the course of human history might be rooted in the epistemic workings of individual minds. An exploration of this possibility may instigate a rare collaboration between social psychologists and other social scientists with interest in collective behavior and in the determinant social stability and change.

This conclusion seems relevant, given the importance that modern societies place on information and knowledge, as well as when considering the uncertainties that the amount of information and diversity of beliefs may create. This conclusion is not explicitly normative but it moves toward normative argumentation in pointing out that socially desirable ends of social stability and social change are at stake, which is why research in the area of knowledge formation is warranted.

The issue of normativity, then, is resolved for Kruglanski through empirical pragmatism: people have cognitive needs that must be resolved and they, consequently, produce knowledge to fulfill those needs. Different needs arise in scientific settings, which require domain-specific rules for knowledge, in comparison to general interaction, which builds more on intuitive social cues and habits (Kruglanski, 1988).

## 6.3 Persuasion Studies and Knowledge

While Kruglanski's approach starts with the individual's needs for a coherent worldview, other researchers have taken as a starting point the prospect of an individual's ability to affect or persuade the group. In persuasion studies, research has tapped into the study of knowledge in two principal ways, either by concentrating on persuasion and individual thought (Petty & Cacioppo, 1986) or by focusing on majority versus minority influence on individual thinking (Martin et al., 2007).

For instance, the elaboration likelihood model (ELM) of persuasion has gained prominence in social psychology as a model to evaluate the dual role of systematic information processing (e.g., the conscious processing of information that requires time and previous knowledge on the subject matter) and non-systematic (e.g., classical conditioning, self-persuasion, heuristic processing) in persuasion (Petty & Cacioppo, 1986; Petty & Wegener, 1999; for a discussion of heuristic-systematic model, HSM, see Chaiken & Trope, 1999). The focus of ELM has been on attitude change in an individual's mind that is built on communications of knowledge. The ELM approach, thus, has a focus on the individual and understands "knowledge" as an information cue relevant to a given information processing task.

Although ELM focuses on the individual, study results have brought significant insight into the role of social groups in affecting the way in which the individual comes to think about different subject matters (Petty & Wegener, 1999). Research in the ELM tradition has shown that individuals can be persuaded substantially by their reference groups. This is especially true in situations where the individual has little previous knowledge on the subject matter and does not have time to engage in systematic information processing. Under such circumstances, people are generally drawn to heuristic methods in knowledge processing in which individuals make their minds by refe-

rencing "experts" or "authorities" of knowledge whom they trust. In that way the knowledge an individual acquires is often a product of social trust (Petty & Cacioppo, 1986). Importantly, research on the minority influence on attitudes shows that minorities–in addition to relevant individuals–can function as epistemic authorities.

From a normative viewpoint, these findings (Petty & Cacioppo, 1986; Martin et al. 2007) are important since they show how persuasion and minority influence can implicitly influence the course of knowledge production. Research seems to point that being unaware of these phenomena would potentially cripple an intelligible discussion of knowledge (Petty & Cacioppo, 1986; Martin et al. 2007).

## 6.4 Personal Epistemologies and Knowledge

While the ELM and minority influence research treat knowledge as a very general concept, scholars interested in personal epistemologies treat the notion of knowledge as a specific type of cognition that is dependent upon individual's cognitive development. The social psychological study of personal epistemologies asserts that adults have different understandings of knowledge, and that these understandings represent the developmental stage of the individual (Ahola, 2009; Perry, 1970; Pirttilä-Backman, 1993; Pirttilä-Backman & Kajanne, 2001). The personal epistemologies approach has, therefore, resolved the issue of normativity of knowledge by building on the developmental framework. In this framework, epistemology is seen as a personal development project that continues even throughout the adulthood as stages of the reflective judgment model (King & Kitchener, 1994; 2002).

Increased reflective ability, according to the reflective judgment model, is attained through development and different developmental stages follow each other (King & Kitchener, 1994; Perry, 1970). Life experience (e.g., the raising of children, moving into a new city), education and work experience have been shown to affect epistemological development in which an individual becomes more abstract and reflective with regard to how they conceptualize and treat "knowledge" (King & Kitchener, 1994). Whether development in personal epistemologies is desirable or not remains in these theories a matter of contention, although the idea of development hints that more abstract and

reflective thinking is preferable.

While a personal epistemology approach focuses on the individual mind, different personal epistemologies are seen as factors in social interaction as well. For instance, recent research based on the reflective judgment model posits that differing views on knowledge may be conducive to social and epistemic conflicts since, for instance, highly reflective patients with developed understandings of knowledge might be more prone to question doctor's orders and instructions than patients with a more concrete and straightforward view of knowledge (Ahola, 2009; Pirttilä-Backman & Kajanne, 2001).

## 6.5 Social Representation Theory and Knowledge

Finally, to turn the focus from the individual as the knowing agent to a more collective approach towards knowing takes us to the theory of social representations. The theory of social representations (Moscovici, 1961; 1973; 1981) is similar to Kruglanski's work in the sense that it attempts to synthesize a number of social processes (e.g., values, practices, ideas) under a single middle-range level umbrella. While approaches by Knorr-Cetina, Rouse and Pickering successfully open up the structure of scientific knowledge itself, they do not directly tap into the question of how such deconstruction can actually benefit social groups in the big picture of social life. The theory of social representations has intended to answer this question repeatedly with empirical studies of its own.[14]

While the social representations approach has focused chiefly on the circulation of scientific knowledge within culture, it has an outspoken focus on social groups as communities that through communication and cultural exchanges incorporate, anchor, objectify, or naturalize new knowledge into the group's vocabulary.[15] By doing so the group members empower themselves

[14]For a recent study on the meta-normative implications of social representations of human rights, see Doise, 2001.

[15]Building on the basic premise of common language a versatile set of *social*, not objective, true or otherwise official, rules apply in the domain of social talk and interaction. Abundant literature dissects these social rules, roles and their meaning (Bugental, 2000; Postmes & Branscombe, 2010; Sherif et al., 1961; Tajfel & Turner, 1986; Turner, 1982). Often, without clearly expressing it, scholars in social interaction focus on the epistemic

and enable social change.

As Serge Moscovici (1973, xvii) posits, a social representation is:

> –a system of values, ideas and practices with a twofold function: first to establish an order which will enable individuals to orient themselves in their material and social world and master it; and secondly to enable communication to take place among members of a community by providing them with a code for social exchange and a code for naming and classifying unambiguously the various aspects of their world and their individual and group history.

Moscovici has later emphasized the significant role that social groups actually play in the formulation of social knowledge through in-group pressure (Moscovici & Marková, 1998). According to Moscovici, even the most professional scientist could not think completely in isolation from the lay ways of knowing but, like everyone else, he or she is subject to the pressures of social life (Moscovici & Marková, 1998; Sakki, 2010, pp. 43). Within social representations research, the starting point has largely been the transformation of scientific knowledge into common sense. Researchers have less frequently focused on how social representations influence the structure and content of science and knowledge in general (Howarth, 2006).

The structure of knowledge, it seems to me, is fundamentally rooted to social groups and the social structure that groups are able to provide. In what follows, I outline a theoretical synthesis of the core functions of groups, which give structure to both the social and epistemic needs that groups generally have. Many of these needs have been covered in approaches seen in the literature review. The following is, thus, an attempt to draw different strands of research together. By doing so, I intend to point out that individual needs–even the general need to know–are directly linked to the social groups in which most of our needs can be met.

## 6.6 The Epistemic Calculus of Groups

Inspired by Howarth's (2006) call for a stronger orientation towards structural inquiry in the social psychology of knowledge as well as Kruglanski's

function of the language in social groups.

(Kruglanski et al., 2006, pp. 97) expressed desire for the interdisciplinary study of groups as epistemic providers, I have proposed a theoretical synthesis called the *epistemic calculus of groups* (Article I; Vähämaa, 2013a). Drawing on the literature covered thus far on the epistemic aspect of social groups, I have identified three core group processes that contribute to knowing in a group context and that allow to draw together several different strands of specific theories. Each of these three cores are also easily connected to the previous discussion (see section *Two Types of Normativity in Social Epistemological Research*) of the meta-normative nature of epistemological research and suggest happiness, the Aristotelian eudaimonia, ευδαιμονια, as the ultimate goal in groups' epistemic efforts.

The three processes together form a social psychological synthesis that has two goals: to help situate specific theories under these three branches and to hypothesize the intuitive and intentionally calculated functions of groups relevant to the acquisition and circulation of knowledge.

The name of the synthesis–the epistemic calculus–is derived from the utilitarian philosopher Jeremy Bentham's idea of *hedonic calculus* in which individuals evaluate all actions and cognitive judgments chiefly by their ability to produce pleasure for the individual (Skirbekk & Gilje, 2001, pp. 263-265). I take Bentham's hedonic calculus to be too narrow in its scope. The research reviewed thus far has the overarching implication that no singular need, even biologically based sensual pleasure-seeking, explains the human pursuit of knowledge.

Positive affect and sensual pleasures are salient to humans and should not be ignored. I include the pursuit of affective stability and the pursuit of happiness, in a broad sense, as an important strand to epistemic calculus. I want to point out that our assessments of knowledge by social necessity give heed to the other group members' needs as well and consider the morals and values of the in-group. It would make little sense to say that knowing is merely concerned with just one's own short-term pleasure even though these needs, too, fall into the category of pursuing personally desirable affective states.

Therefore, the name epistemic calculus is coined to, in particular, underline the necessary connection that humans have with other humans and that

this relationship is fundamentally maintained by the many social rules and processes inherent in culture. The notion of *calculus* also implies that there are some stable and core characteristics in groups that can be abstracted and formulated as type of senses listed below. These abstractions are conceptualizations for research purposes but they also straightforwardly describe processes that occur all the time in everyday life. The *senses* of the epistemic calculus aim at an axiomatic summary of group processes whose validity can be examined through reflection and plausibility. Also, the outlined senses manifest themselves in various group contexts and these manifestations can be observed empirically. No one, by default, can live in isolation from the social world and simultaneously be a beneficiary of social pleasures. It takes both intentional calculating and intuitive reliance on social interaction to gain knowledge–the hierarchy of these parallel processes varies from a situation to another. [16]This view is further discussed in following section and in Article II.

The following three functions of groups are the core properties that, according to the *epistemic calculus of groups* synthesis, enable social groups to gain knowledge. Groups provide individually felt senses conducive to knowledge, namely:

1. The sense that one possesses an ability to discuss and pursue truth, and to review and select different perceptions (following Habermas, 1984, p. 11; 1998, pp. 232; recently Smedslund, 2012).

2. The sense of being a functional, accepted, and a credible member of the group (following Tajfel, 1982, pp. 21-2; recently Kruglanski et al., 2006).

3. The sense of an ability to maintain personal affective stability and to achieve happiness (following Annas, 1993, pp. 43-6; 2004; recently Fredrickson, 2009).

Together, all three senses form the epistemic calculus of groups. By calling these *senses* instead of *facts* or *reasons*, I want to highlight the affective basis of knowledge as it is generated in the group context. Our social pathway to

[16]The epistemic calculus of groups summarizes social processes that mainly arise for the sake of functionality (i.e. the level of social normativity) which then, from an analytical outsider's perspective, have larger meta-normative implications (e.g. knowledge matters for reasons of happiness).

knowledge is as much affectively nuanced as it is cognitively driven (see the discussion in the *Affects and Cognitions in Epistemic Judgment* section). The presented senses are also deeply social. This points to the fact that information never exists in a vacuum and becomes known only when it is reviewed by a human mind which, in turn, arrives meanings from the social world. Therefore, most of the time, we must choose from the "beliefs" that are available to us through various media, our family, friends and any other social venue. The sets of beliefs and information available are finite, and ultimately accessible only through other human beings and their communicative output. The process of knowing, then, already holds a lot of knowledge in itself through group interactions that build on language and shared common sense.

The aspects of the epistemic calculus are explications of practical processes. However, the three core group processes with their practical goals can also be seen as manifestations of some philosophical normative ideals of reciprocal recognition, free speech and ethics, as envisioned by Jürgen Habermas (1998, pp. 232; 1985) in his communicative rationality program and by Axel Honneth (1995; 2000) with his anthropological ethics program. Both Habermas and Honneth (1995; 2000) point out that throughout history the cooperations among human beings have led them to adopt practices that enable humans to achieve some basic standards of what is *understandable* communication (Habermas, 1985) and what is an *ethical* or *good* way to deal with other people (Honneth, 1995; 2000). Practices can, in this view, manifest some philosophical ideals of reasonable communication (the basis for good communication) and mutual recognition (the basis for ethics). Along the *senses* of the epistemic calculus a researcher can explicate the epistemologically interesting and revealing ideals and contradictions *embedded* in group practices. The epistemic calculus points out that there is teleological pressure in group practices toward epistemologically sound outcomes. If the goals of interaction, as outlined in the epistemic calculus of groups, are contradicted or conflicted within groups or between groups, then, there is also a case for *epistemological* contradiction of conflict. Here, a group praxis provides a theoretically sound basis for a social epistemological abstraction per se without turning to some external epistemological theory or school of thought.

The social epistemological abstraction given in the epistemic calculus of groups does not aim to be analytically true but rather contingently valid, that is, its validity depends on the level of consensus the claims raise upon

reflection and dialogue. Thus, the theoretical contribution is nonempirical, or conceptual, when compared to the mainstream social psychological approaches reviewed above. However, the conceptually observed facets of the epistemic calculus can be observed as practical manifestations in empirical reality, too. The goal of the empirical study of these manifestations is then more on the *explication of the potential epistemic contradictions and conflicts* the various groups can bring about their interactions than testing empirically the validity of the epistemic calculus of groups.

# 7 Implications of the Epistemic Calculus

The following sections briefly review the implications that arise if the argument holds that a group's role in forming knowledge subsumes a variety of rational, social and affective processes.

## 7.1 Changing Knowledge via Changing Social Groups

Given that social groups influence members' knowledge via the epistemic calculus of groups, the question arises of how easily an individual may deviate from group consensus. Would the pressures of uniformity in a given group, in principle, lead to a type of *spiral of silence* as intuited by Noelle-Neuman, that is, to an individual's tendency to gravitate towards the beliefs an individual thinks are favorable within the in-group, either in small groups or at the society at large (Noelle-Neuman, 1974)? I believe there are two immediate pathways for a change of beliefs that are held as "true" knowledge. The first one is a group-scale pathway, which was explicated above as an open dialogue that attempts to take into account the typical features of epistemic calculus of groups in in-group deliberation.

The second, the individual pathway, is simply a change of a scenery. For instance, in order to change beliefs and behaviors it might be helpful to enter different kinds of social contexts that produce different types of affective states. A dramatic but helpful example of this type of change of individual knowledge comes from a recent research study that considered a group belief perspective on addictions. As West posits in a discussion of how an alcoholic attending repeated meetings of the support group Alcoholics Anonymous

may come to change his/her mind, through repeated emotional and cognitive experiences which he conflates to be "feelings" (West, 2014, pp. 45):

> ...it should not be the case that *fewer* feelings lead to different sorts of behavior in the case of those with less *direct* experience of some phenomenon (who then turn to the social realm). What must be the case is that they turn to *other* feelings, and those feelings are feelings which arise as the result of direct or indirect (mediated) social experiences.

This view assumes, then, that while it might be difficult for an individual to have control over feelings that tend to rise in one group setting, control may be more easily exerted over the overall social setting and context. To have a change of mind or "a change of feelings", one needs to change social circles. Roger Scruton (1980), a philosopher with a research agenda on the practical side of emotions, supports this view. Scruton points out that, while we may not have volition over our feelings, we can better our lives by learning and "knowing what to feel." For instance, as an adult, I can choose different social groups to join to in order to experience different types of feelings (Niiniluoto, 1996, pp. 112).

Also, if feelings are given the epistemic status of a type of knowledge, then, they warrant some justification and are subject to skepticism and rational inquiry. It seems that much of what we know is only implicitly felt as reasonable or right. For these reasons feelings, explicated in the epistemic calculus, are present in all of the core properties of the calculus as affective states of the individual.

## 7.2 Epistemic Calculus in Classical Experiments

Affectively driven social rules of in-group conformity have been demonstrated in classic social psychological experiments. Already Solomon Asch (1958) showed in his "length of the line" experiment that social pressure and the need to conform are socially mediated factors of group knowledge. Asch (1958) demonstrated in a simple way how we are bound to conform to social cues and pressures when making affective evaluations of knowledge. In the experiment, the assessments of the "length of the line" given by participants were in line

with those of other test group members in order to alleviate emotional dissonance in the test subject, even when they saw the line differently from others (who were researcher's agents) in the test group.

### 7.2.1 Robbers Cave Experiment

Sherif's (Sherif & al., 1954) classic *Robbers Cave Experiment* in a boys' summer camp revealed some core aspects of group epistemology put into practice. Sherif conceptualized the acceptance of consensual and shared knowledge in the in-group and the acceptance of individuals to become group member as various "stages" that progress through rapid socialization. Sherif's first stage was called "in-group formation," in which upon arrival to the camp the boys were split into two approximately equal groups based on social similarities.

Each group was initially unaware of the other group's presence. The second stage, the "friction phase," began when the groups were entered in competition with one another in various camp games. Valued prizes were awarded to the winners. This caused both groups to develop negative attitudes–negative feelings–and, in consequence, negative behaviors toward the other group. The third and final stage was the "integration stage." During this stage, tensions between the groups were reduced through teamwork-driven tasks that required intergroup cooperation toward a common and superordinate goal understood by both groups as desirable.

### 7.2.2 Goals as Collective Knowledge

The main conclusion of Sherif's experiment is often posited to be that that in-groups are hostile toward out-groups in the absence of a uniting goal that makes the groups work together. That is shown by Sherif's experiment, certainly, but misses an alternative or parallel interpretation of the social-epistemic aspect of the process that for "a uniting goal" to be meaningful, it must be shared *knowledge* that is understood similarly by the groups in such a way that they both desire the achievement of that goal. Besides the unifying factor of goal orientation, Sherif's experiment shows how the groups' inner standards of knowledge changed in a process that makes them have different feelings about the same things (mainly, about members of the other group).

Sherif's experiment also highlights the epistemic function of groups, which is, in this alternative reading, equally as interesting as the more commonly made point of how intergroup tensions are to be ameliorated. The experiment also shows that, with the help of a uniting goal that was given to group members by experiment leaders, the social group was able to function as a powerful epistemic synthesizer in which group members re-evaluated themselves and others, and developed collective understandings or goals, and thus, carrying out the epistemic calculus of groups. This type of approach would be potentially a third pathway towards the change of group knowledge.

In Sherif's experiment, the pathway to new frameworks of knowledge successfully employed the social cohesion that emerged in combining two groups into one new group. The boys, intuitively, standardized their epistemic views on the superordinate goal. As a result, different groups formed at once a meta-group, a sort of hybrid of many groups like a miniature nation, say, which generated a single affect on some key goals. For the boys at the camp, such a shared group epistemology was constructed around beliefs that were held true about a common prize. Groups tend to maintain their existence via their ability to generate positive affects in members as a result of group membership; the paradox is that they do this by generating negative affects towards members of out-groups, as the Camp Cave Experiment also suggests.

# 8 Limitations of the Theory: Is Knowing Ever Really Intentional?

Language, as suggested thus far, consists of shared goals, rules and common knowledge. We have intentions–conscious desires–towards all of these things and these intentions are fulfilled both implicitly just by using language (i.e., grammar and syntax yield sensibility) as well through explicit pursuit (i.e., expressing personal desires to others).

However, while it is easy to acknowledge the connection between intentionality and language, research community is less clear about the limits of human consciousness. For instance, studies in the social cognition tradition

by Nisbett and Wilson (1977), Bargh, Chen, and Burrows (1996) and Pelham et al. (2002) provide experimental cases that argue for the lack of human conscious reasoning in many important decision-making situations. Experimental scenarios are often simplified scenarios of everyday life, but nonetheless they pose an important question about the limitations of conscious reasoning in group contexts. If individuals are driven only by instincts and affect, then, how meaningful it would be to talk about an epistemic group process that requires conscious participation? Let us briefly consider the experiment by Nisbett and Wilson (1977, pp. 243-249) as an example of automated judgment studies.

In Nisbett and Wilson's (1977, pp. 243-249) experiment, test subjects had to choose from four identical pairs of stockings and evaluate which was of the highest quality. The research found a significant positional bias in the results. The test subjects were four times more likely to choose stockings placed to the right of them. The reasons, however, that the test subjects gave for their choices were obviously fabricated. No reference was made to the position of the chosen stockings. Rather, the test subjects described the qualitative differences in knot, sheerness and so on. Upon query about the possible positional bias the test subjects straightforwardly denied such a possibility.

Nisbett and Wilson (1977, pp. 243-249) hypothesized that the subjects had implicitly consulted cultural and personal a priori causal theories that suited the situation nicely. In other words, in the stocking scenario, test subjects tried to find reasonable explanations for their own behavior and in order to do so they drew upon their old mental schemas that resembled the present situation.

While affective and automatic responses in the light of evidence do influence human decisions, the automaticity (e.g., in the study by Nisbett and Wilson, 1977) present in some of our observations and behaviors does not make conscious discussions impossible (for a detailed discussion, see Kauppinen, 2007, pp. 130-132). Rather, I take the experimental social psychological studies in automaticity to explicate the importance of awareness of automatic and affective (unconscious) phenomena.

Automated and rapid affective reactions influence our behavior–indeed, they may help groups function and make rapid and intuitive choices–and

thus a student of group epistemic judgment should take these processes into the research program. Intuition and intention can both serve the same goal of helping people to function in groups. The specific theories and hypothesis presented in the automaticity approach can strengthen the analysis of the epistemic calculus of groups.

## 8.1 Agency Means Free Will

Considering the "automaticity challenge" presented above it could be argued that survey research–as employed as part of the current dissertation–can only yield fabricated or automated responses with little reference to the intentional thought of the respondent. However, despite the contextual limitations of a survey (e.g., topics of questions asked, time sent answering the questions, "errors" made in filling up a questionnaire), the free choices made by the agent count as reasoned responses and thus reflect what the subject really thinks and means (Moring, 1989, pp. 21-22). As von Wright (1980, pp. 78-79) posits:

> The "freedom" or "free will" of a man consists in the fact that he acts, one could say. And that he *acts*–not just behaves–consists in the fact that he (we) can account for what he does in terms of what I have called determinants of human action. Therefore the concepts used for describing and explaining a man's actions, such as motive, reason, intention, choice, deliberation, etc., are all of them tied to the idea of *freedom*. To deny that an *agent* is *free* is to commit a contradiction in terms. The "mystery" of freedom, if there is one, is the "mystery" of the fact that there *are* agents and actions.

Von Wright's reasoning points out that if a social scientist is to allow any agency for research subjects, the agents are entitled to "free will" regarding their personal reason, intentions, intuitions, and so on. The task of empirical analysis is to give plausible interpretation to the reasons and intentions that come across through a survey instrument or an interview. The posited senses of the epistemic calculus of groups are actively felt by agents and as such, these personally felt senses are rational, intuitive and intentional to the in-

dividual.[17]

Empirical research on the aggregate level can, in part, reveal how these intentions, intuitions and reasons of the individual relate to the intentions, intuitions and reasons of others. Importantly, though, as the idea of intuition suggests the reasons held by the individuals for their actions are not always explicit to themselves. The same goes for consequences of actions; they are not always consciously meant or intended. Intentionality of the agent, thus, may be improved through explication of empirical findings. Before turning to the empirical studies presented in this dissertation the following section reviews once more the conceptual framework of the epistemic calculus of groups.

# 9 ARTICLE I: Social Groups and the Epistemic Calculus of Groups

Article I of this thesis deals directly with the notion that groups are fundamental to the formation of knowledge. In the article "Groups as epistemic communities: Social forces and affect as antecedents to knowledge" (Article I; Vähämaa 2013a), it is posited that it is possible to directly describe a theory of an epistemic calculus of groups that simultaneously connects specific theories (e.g., the need for cognitive closure by Kruglanski et al., 2006) to metatheories (e.g., communicative action by Habermas, 1984) and synthesizes core properties relevant to the acquisition and circulation of knowledge in social group settings.

The epistemic functions of a group are conceptualized as the epistemic calculus of groups. Built upon the literature dealing with the epistemic aspect of social groups, as reviewed above, the calculus identifies three simultaneous group processes that contribute to knowing. The three processes to-

[17]Some researcher see the free will to choose beliefs as an antithesis for any group to attain knowledge. For them, doxastic voluntarism is incompatible with positive epistemic properties like knowledge or justifiedness. The chief point here is that groups may adopt views for reasons other than truth. For instance, K. Brad Wray (2003) argues that groups, unlike individual agents, always choose to believe based on their goals which necessarily leads them away from knowledge.

gether form a social psychological synthesis that is meant to situate specific theories under these three branches. The other function of the synthesis, in addition to its helpful bringing of different theories together, is to hypothesize the key properties that typically influence people in real-life group situations when they acquire and circulate knowledge.

The following three aspects of groups are the most relevant in the synthesis I call the *epistemic calculus of groups* (Article I; Vähämaa, 2013a, 14). Groups, in particular, provide individually felt senses conducive to knowledge (see section *The Epistemic Calculus of Groups* for the aspects of the calculus). The presented "senses" can be approached as independent strands of research but, taken together, all three dimensions form a middle-range theoretical hypothesis of groups' epistemic function.

I propose that epistemic calculus could be used as a type of checklist of the group's role as a knowledge-forming entity (Vähämaa, 2013a, pp. 14):

> The justification of these 'senses' can be opened to critique and elaboration via discourse in group contexts where social knowledge perceptions are circulated. This type of discourse would further enhance the epistemic value of a particular shared. Such casual and open discourse could be achieved without violating the generally virtuous principle of free speech. The agency in this process of attaining social knowledge is then less the individual "I" as the knower and more the "we," the group itself, as the agent who 'knows.'

The article encourages open discourse on the possible influence of the group as a whole to the knowledge of the individual. Yet, while the dimensions of epistemic calculus potentially aid group conversations of epistemic significance, do these three dimensions of the calculus actually help the group to attain "truth" in any other sense that in the sense of in-group consensus?

As a response to this potential critique, I suggest that the aspect of time is the most important element that works in favor of truth-oriented group-judgment in the long run. The emerging events of life make it impossible to completely divorce group consensus from the world outside the group. While in the short term in-groups can provenly have very persistent beliefs (i.e,.

Festinger et al., 1956), in the bigger picture the function of public discourse in the public sphere provides a platform to alleviate cognitive dissonance and help the public adjust itself to emergent facts (Festinger, 1957; Habermas, 1984). For instance, the recent public debates on climate change is an example of a public issue that is constantly validated against time as things evolve and progress (Vähämaa, 2013a, pp. 14):

> In the case of beliefs regarding global warming any interpretation of reality will be confronted by evolving events. It is likely, however, that even in the face of drastic changes in global climate, groups will have different interpretations. Some may blame ineffective policy implementation, some may blame human ignorance, greed or other vices, and some groups may regard global warming as a natural phenomenon devoid of human influence.

There may be no other public epistemic solution or practice at hand than the dimensions listed in the epistemic calculus of groups. This view endorses the prospect that scientific knowledge produced with a specific epistemology eventually becomes, if the truth-value of the views hold against time, incorporated into public understanding. The pathway is, however, likely to be lengthier than a scientist would prefer. Many important societal issues are derivatives of social scientific and natural scientific observations. As such, their relevance is first calculated in scientific circles and, afterwards, they enter the public domain via the social route which is here conceptualized as the epistemic calculus of groups. As I posit (Article I; Vähämaa, 2013a, pp. 14):

> Many societally important matters are beyond the grasp of lay people and do not have high salience for group members. For these reasons, epistemic diversity is likely to be found around matters that are low-salient, abstract, and beyond first-hand knowledge on the part of group members.

Considering the modern standards of free speech and the prevalence of democratic decision-making processes, in any event no quick or pervasive method may be available if the set goal is a large-scale change in public perceptions. Also the dimensions of the epistemic calculus point out that, while groups are conducive to knowledge, they operate in a conservative way (i.e., they maintain the group stability, keep up the in-group standards) that

a scientist, for instance, would find extremely biased. For example, research suggests that physicists tend to be biased in their evaluations if the research findings do not come from their own in-group (Morton et al., 2006). Group bonding, in short, can introduce a bias towards the in-group even among the most highly educated (Morton et al., 2006). As the first article concludes (Vähämaa, 2013a, pp.4):

> Different strands of social research support these claims. For instance, the classic and contemporary elaborations (Cooper, 2007) and two-step flow of communication theory (Nisbet and Kotcher, 2009), coupled with the epistemic bias that group membership introduces in the interpretation of scientific facts (Morton et al., 2006), help to explain divergence in public knowledge.

In the next section, then, it is important to evaluate the relationship between affect and cognition. This is salient as what we may consensually regard as knowledge has evidently both elements in action.

## 9.1 Affects and Cognitions in Epistemic Judgment

The dimensions presented in the epistemic calculus of groups combine affect and cognition. It is taken as an intuitive premise that our social groups make us feel differently about different topics. Recent research gives support to this intuition. We, as individuals, causally take advantage of the features explicated in the epistemic calculus of groups to allow for rapid affective evaluations as posited by Slovic and collagues (Slovic et al. 2004; Slovic et al. 2007). As stated in the article (Vähämaa 2013a, pp. 12),

> Recent empirical studies show that people commonly merge affect in their rational judgments about divergent risk perceptions (Loewenstein et al. 2001; Sjöberg 2007, pp. 228-30; Slovic et al. 2007).

Individuals, thus, have the capacity to merge affect with rational, cognitively driven perceptions. The end result is a mixture of affective and cognitive processes: a hybrid of affect and cognition in which is it hard to separate these two elements. The process of epistemic calculus of groups is a mixture of affective and cognitive processes in which the posited "senses" of possessing an ability to discuss and pursue truth, of being a functional and accepted

group member, and of an ability to maintain personal affective stability are simultaneously both cognitive and affective.

### 9.1.1 Affects and Cognitions as Mixtures

Recent research gives further support to the conceptualization of affect and cognition as mixed.

For instance, van der Linden (2014, pp. 9) in his research related to climate change perception posits that it is often unnecessary to pursue a keen semantic separation of the cognitive and affective. Van der Linden (2014) points to the fact that the cognition versus emotion debate is seen as holding back research in psychology (Kleiginna & Kleiginna 1985; LeDoux 1995). For that reason, Lai et al. (2012) and van der Linden (2014) suggest that social psychological research should avoid unnecessary semantics. Rather, the authors (Lai et al., 2012; van der Linden, 2014) urge that a focus must be maintained on exploring the functional relationships between cognitive and experiential constructs in specific contexts.

Another promising approach takes the affect-cognition debate even further by treating all beliefs as "feelings" instead of cognitions (West, 2014, pp. 37-38). West's argument is aimed at the specific context of social groups in which he thinks that rational beliefs or cognitions are better conceptualized as cumulative types of "feelings." The feelings are simply the heartfelt beliefs "that make sense and feel right"–which are tied to social groups with different agendas (West 2014, pp. 37-38). If feelings are not treated as "petty feelings" the information they carry can be incorporated into serious debates and considerations. Given the status of knowledge, feelings can be approached with a proper touch of skepticism and reason.[18]

Whatever the final outcome of the affect-cognition debates will be, it seems clear that knowledge in the group context stems from both emotional and rational needs, as suggested by the three "senses" of epistemic calculus.

[18] West's idea holds a lot of promise for future research since it allows for a full emphasis of the "feeling" end of the affect-cognition hybrid. Affects, in this view, are then not predictors of cognitions as some recent research suggests (Leiserowitz 2006; Sunblad et al. 2007) but affects and cognitions may actually influence each other simultaneously (van der Linden, 2014, pp. 9) creating social knowledge which is at once both affect and cognition.

# 10 ARTICLE II: The Necessity of a Group Epistemology

The dissertation's second article (Article II; Vähämaa, 2013b) was originally a response to a commentary of my first article (Article I; Vähämaa, 2013a) by Don Fallis and Kay Mathiesen (Fallis & Mathiensen, 2013). The debate rose due to my explicit criticism of the analytic epistemological approach in an effort to understand how groups generally deal with knowledge. The debate was invited by the Editor of *Social Epistemology*, professor James Collier, and appeared in *Social Epistemology* as public correspondence in the year's first edition of volume 27 in spring 2013. I will here briefly review the key elements of the debate and the elements of critique put forward by Don Fallis and Kay Mathiesen in their commentary. Then I will explicate why a group epistemology is, from the viewpoint of fluid social life, a necessity that must appear in some a priori manner when people try to make sense of each other through communication.

In Article I (Vähämaa, 2013a), I criticized Don Fallis' (2007) article on "Collective Epistemic Goals" for taking the acquisition of true beliefs to be the primary and correct epistemic goal of groups. The key to the disagreement lies between the approaches adopted in social epistemology (as envisioned by Fuller, 2002) and veritistic (i.e., truth-oriented)–or analytic, terms are interchangeable–social epistemology (as envisioned by Goldman, 1999). As presented in the introduction, the analytic tradition sees formal logic as the golden standard for knowledge even for, and in, social groups, and therefore, sees unnecessary to the analysis the non-veritistic epistemic standards (such as the dimensions of the epistemic calculus of groups) as they occur in social life.

In a way then, the analytic approach has already achieved its conclusion. The social epistemological approach encouraged by Fuller and others (for a review, see Goldman, 2010) has two focuses. The first is to consider other possible epistemic mechanisms may exist in society in addition to the truth-oriented or veritistic analytic tradition (built upon propositional logic), which

in itself is not refuted but seen as means to achieve knowledge in specific and instituted contexts. The second is to explicate the meta-normative commitments of one's own research program.

In Article I (Vähämaa, 2013a), I noted that Fallis (2007) is too narrow in his view. I suggest that in addition to veritistic, truth-oriented goals, groups have other epistemic goals as well. These goals are explicated as the personally felt "senses" an individual seeks to maintain as a social group member. Fallis & Mathiesen (2013, pp. 21) critique this approach as follows:

> Epistemologists usually focus on the epistemic goals that individual inquirers have for themselves. But in his *Knowledge in a Social World*, Goldman (1999, 93) also looks at the epistemic goals that we can have for 'a community of agents.' For instance, we want jurors to acquire true beliefs about the guilt of the defendant, we want consumers to acquire true beliefs about the safety and effectiveness of products, we want voters to acquire true beliefs about the views and qualifications of candidates, and we want scientists to acquire true beliefs about how the world works.

Fallis & Mathiesen (2013, pp. 21) focus on the idea that the sort of "best effort" of the individual as well as the group is to promote the pursuit of truth across social domains. I propose, on the other hand, that while groups may at times proceed analytically towards a scientific criteria of truth, they typically do not. Fallis and Mathiesen identify this view in their commentary (Fallis & Mathiesen, 2013, pp. 22) and write as follows:

> In his article, Vähämaa uses Fallis' article as a prime example of the wrong way to talk about the epistemic goals of groups. But in this note, we argue that there is really no deep disagreement between the two articles. Any impression that there is is based on a misunderstanding of Fallis's article and/or of the larger project of veritistic epistemology.

The "misunderstanding" of the larger project of veritistic epistemology is in my view the disagreement between the social psychological theorization of the epistemic calculus of groups and the veritistic hypothesis promoted by Fallis and Mathiesen. Although, as seen in the next quote, Fallis and

Mathiesen acknowledge that social groups have multiple other goals than that of truth, these other goals cannot be treated as conducive to knowledge. In that sense the social functions, the senses of the epistemic calculus, cannot be seen to be epistemic in the first place. Fundamentally, then, Fallis' and Mathiesen's allegiance lies in the tradition of analytic social epistemology which they view as a specialized subject (Fallis & Mathiensen, 2013, pp. 22):

> Veritistic epistemology is a specialized subject, analogous to environmental studies and nutritional studies. Neither epistemology nor these other fields tries to fix correct social policies 'all things considered.' Each is dedicated to a special social value, one circumscribed kind of thing that people and institutions take an interest in.

In the Goldman's (1999, pp. 6) view–endorsed by Fallis and Mathiesen (2013, pp. 22), the *epistemic* goals of groups always lie in the specialized effort of veritistic epistemology. But how can groups then evolve and emerge in the first place without such specialization? Could language have some inherent potential to function as a primary group epistemology that is not necessarily true but is, nonetheless, sincere and functional? Responses to these questions are explicated in what follows.

## 10.1 The Necessity of a Group Epistemology: An Example of a Caveman Epistemology

For any social group to exist there needs to be some sort of group epistemology at the very genesis of the group (Vähämaa, 2013b, pp. 26). A nascent–or a newborn–group epistemology is largely of an affective nature based in our social needs and their fulfillment (Brandom, 1994). Social needs require social means which, in turn, involve both cognitive and affective evaluations–taken together these evaluations form a nascent *group epistemology*. So, to achieve any social ends or goals one needs to have some *a priori* knowledge and, hence, a group epistemology. As it is theorized in conceptual role semantics, it seems plausible to assume the existence of a "first" or "fundamental" primitive normative notion, with which semantic notions may be explained. For instance, the separation of speakers by some social reference (i.e., the ability to tell the difference between oneself and others) is such a primitive necessity (Brandom, 1994; 2000; Whiting, 2014). As primitive as the early norms of

social psychological co-operation may have been, it is not necessary to take the existence of such norms to be inexplicable. Rather, as the following approach underlines, one might instead view the early norms as instituted in primitive behaviors or social rules.

To imagine how such an elementary level of epistemic praxis may evolve, we could take the example of two human beings meeting each other for the first time to achieve some shared meanings, to communicate, and thereby make sense of one another to achieve some joint end. As biological history has it, people have throughout time formed groups and sought out other people to meet individual needs through collective action. Consequently, as people group together, they at once have some common language or signaling system that sets the basic rules of knowing about each other, as well as the ability to approach joint goals via symbols and to recognize the existence of the group in some social terms, such as amiable gestures and social bonding of sorts.

This type of "caveman epistemology" may be silly as an example, but it underlines the reciprocity of groups and group epistemologies. One cannot have one without the other. A group has to have an immediate set of epistemic standards–at least in the form of some initial language–in order to exchange any sensible communication, and as the group evolves, it begins immediately to create further group beliefs and expand group epistemologies about the world "out there." If we linger a bit more on the image of two paleolithic men or women, we could assume that various "beliefs" or "feelings" would evolve and be communicated about the natural objects that the cave folk encounter.

Even in the eras before language, the basic items of perception–birds, trees, food and dwellings, as well as the presumable "other people" in the perceptible world–would have to be given a set of meanings that stem not only from perceptions but also from *meanings* within the social reciprocity held by group members. They would not speak merely of "the big house',' we would posit; they would speak of "the big house where the chief lives',' a nomenclature with a social dimension. They would thus be likely to develop mutual trust and a felt sense of belonging together.

All of that, I presume, would result in an elementary "epistemic calculus of groups" that would enable both of our imaginary cave-dwellers to make

observations of the world and, through dialogue with the other group member, to develop *social* meanings about the world. The Ur-sprache, in its most primitive form, would have to be social, since it would have to be a joint effort; the Ur-sprache would be a group epistemology as well as a shared discourse.

### 10.1.1 Epistemology in Biblical Folklore

This caveman/woman scenario is actually a modified version of another well-known Western folkloric tale of the genesis of a group epistemology. The Christian Bible goes to some length to describe how early people encountered animals, plants and the like, and in the process of observing them, the First Man (אָדָם) gave them names–the first bits of social knowledge of the world. Adam, as the religious legend has it, formed a group epistemology with none other than God himself and communicated with God the names of various things that sounded good to him (or, as Genesis 1:27 has it, them; the use of אָדָם is plural.)

To secularize the Biblical story, with no intention to downplay its religious meaning and status, I think the concept of "God" could be replaced with the idea of an early epistemic community able to exchange ideas about meaningful things and in that way form knowledge. Perhaps the genuine awe about the abundant nature of the world made the early communities feel like they dwelled in a pure sanctuary (גַּן עֵדֶן), where the privilege to give names and agree upon them was concomitant with act of talking with God himself. Who knows?

The important point, regardless of the historical development of early group epistemologies, persists. Groups arise to form meanings and, in the process, they form group epistemologies. No knowledge, thus, exists without groups and no groups exist without shared knowledge–a shared set of reciprocally-understandable communication.

In the commentary article, I conclude that the simple act of paying attention to the effect a group may have on knowing may be a sufficient task for social epistemology. I conclude (Vähämaa, 2013b, pp. 28):

> Simply put, the virtue of paying attention may better our li-

> ves and lead us towards something we call knowledge, although "truth" will mostly remain unachievable. I do realize, as Fallis and Mathiesen note, that I contradict myself to the extent that I see the veritistic epistemological program as valid in some specific contexts in which knowledge is specifically justified true belief. But, if we want to make social epistemology to count, the main focus should be on the seven billion people and on the mundane. We have the benefit of a doubt through social science and we have the benefit of language to talk and to make sense of the important and current social problems.

# 11 ARTICLE III: Empirically Demonstrating Group Epistemologies with Math Perceptions

If my previous contentions regarding the relevant group processes related to group epistemologies hold, it should be possible to conduct empirical research that describes, in a straight-forward manner, statistically significant differences between groups and their respective "beliefs" variables, using group membership as an independent variable. If the conceptual analysis is valid it would hold up procedural examination; variances of group epistemologies should be explicable via social scientific methods. Article III of this dissertation (Vähämaa & Härmälä, 2011), "Comparing conception of mathematics: Norwegian and Finnish university students' definitions of mathematics", does exactly this by taking an empirical survey approach to the epistemological function of cultural groups. As posited in the article (III; Vähämaa & Härmälä, 2011, pp. 71):

> There is no direct access to the perceptions as such. One needs to ask questions to attain knowledge of those perceptions. Thus, there is an interesting social epistemological aspect to our inquiry. The study of mathematics perceptions helps to see what we regard as "mathematics"–in other words–what kind of things we know as mathematics.

## 11.1 How Do Students Conceptualize Mathematics?

In the article, definitions of mathematics and numbers are conceptualized as indicative of different epistemic communities and, as such, were used as predictors in a regression predicting attitudes towards mathematics. "Definition" is used as a generic term throughout the article as well as in this review. It is interchangeable with "belief" and "perception." The term "belief" is used in in the discussion of the epistemological interpretation of the survey results. The term "perception" was used to highlight the public and socially shared nature of mathematics definitions.

Attitudes, achievement history in mathematics and demographic variables, in turn, were used in logistic regression as independent variables conducive to different definitions. These variables were hypothesized to be aspects of different group epistemologies surrounding the conceptualizations of mathematics and numbers. (Vähämaa & Härmälä, 2011, pp. 76-77) While there has been a substantial amount of belief research in the area of mathematics education (e.g., Picker & Berry, 2000; Urhahne et al., 2011, cited in Vähämaa & Härmälä, 2011. pp. 73), the belief research tradition has mainly focused on explicating the diversity of mathematics-related beliefs. Thus, the conceptualization of "beliefs" as a type of mathematical knowledge per se–idiosyncratic from a social group to another–was a novel approach. As we maintain (III; Vähämaa & Härmälä, 2011, pp. 71):

> Our analysis adds to the body of belief research in mathematics with a perspective of international comparisons. At the end of the paper we discuss the social ontological function of perceptions of mathematics. By social ontological we mean the everyday understandings and socially shared definitions of what mathematics is. In this way our contribution is both philosophical and empirical.

The bi-national research project was carried out in two basic steps. We first gathered data from a group of Finnish university students via asking them to describe, on a research questionnaire in their native Finnish, their history of achievement in mathematics, their major in university studies, other demographics (i.e. gender, age), their perceptions of applicability of mathematics, their liking of mathematics as an attitudinal variable towards mathematics and how they would describe what mathematics and numbers are, as separate constructs, in their own words (III; Vähämaa & Härmälä,

2011, pp. 76-77).

The survey instrument was a questionnaire circulated in a large lecture class that all social science students take at some point. The sample varied by age, stage of studies and major. A variety of responses were given to the question of what mathematics and numbers are. Then, we gathered a similar data set from Norway to construct a comparative study. Before discussing the results of the comparison, I will briefly review the phases and analysis of the Finnish sample.

### 11.1.1 Culture as an Aspect of Epistemic Bifurcation

It seemed as if students were talking about entirely different things although each was responding to the same respective term, "mathematics" or "numbers". In sum, a variety of conceptualizations as well as facts emerged in the students' descriptions. We had hypothesized that women would, on average, respond differently than males; but this was not the case. We did not see significant differences by gender at all. Neither was there a significant difference in perceptions with those who had more positive attitudes towards mathematics in comparison with those with more negatively geared attitudes. What we did see in the Finnish sample were moderately significant differences in the understandings of "mathematics" and "numbers" between low-achieving and high-achieving students. (III; Vähämaa & Härmälä, 2011, pp. 76-77)

"Mathematics" was typically described in more abstract terms by the high-achieving students; and consistently described in more concrete terms by the low-achievers. The cluster of "high-achievers" had had consistently good grades in mathematics (from elementary school through high-school). "Low-achievers" had worse grades and expressed less positive affect toward math. The low-achievers did not like mathematics as much as the high-achievers did. While this may not seem surprising, it is more interesting to consider how it is that good grades and liking mathematics together affect students' mathematics perceptions.

On average, the high-achieving group approached mathematics largely with positive affect and wordier descriptions detailing the benefits one gains from the study of, and use of, mathematics in everyday life as well as in

thinking about the world in general. The low-achievers were less positive and described mathematics in a more distant and impersonal manner. These patterns were moderately consistent but not clearly robust. Low-achieving students would occasionally describe high positive affect towards mathematics and have highly abstract understanding of what mathematics is. Together these findings made us hypothesize that the differences in perceptions were a result of long-term cultivation and learning–not just a crude measure of ability or aptitude. Based on the findings we constructed two main categories of mathematics perceptions that were simply the "abstract" perception and the "concrete" perception. As we write in the article (III; Vähämaa & Härmälä, 2011, pp. 79):

> The concrete category reflects the students' answers that emphasized and depicted mathematics as an exact, typically numeric system, entirely aimed at generating calculations and formal operations. ... The abstract category contains the responses in which mathematics was seen as a means to achieve knowledge. Mathematics was not seen as end in itself.

While the findings in Finland indicated that educational history–the achievement factor–to a degree predicted the quality of mathematics perceptions, it left open the question of whether the surrounding culture would be a more powerful explanation in further analysis. The variations of the findings hinted that, while achievement is generally a good predictor of a perception, it does not say anything about the social context in which a particular way to understand and express is acquired. We hypothesized that cultural differences (e.g., ways to talk about mathematics, culturally common perceptions) are potentially more significant predictors to different perceptions than the mere level of previous educational achievement.

Taken together, cultural idiosyncracies form the culture as a whole. We presumed cultural differences to play a key role in communicating divergent mathematics perceptions and took the view of *culture as a group epistemology* that, through cultivation and socialization, teaches us how to approach topics, even one so abstract and universally formal as mathematics. To test this hypothesis in a cross-national context, we collected similar data at the University of Bergen in Norway.

Results of the survey straightforwardly showed that Norwegian students, in the limits of our sample, seemed to have much more uniform definitions of "mathematics" compared to to the Finnish students. In addition, Norwegians were also less positive in their overall attitudes than the respondents in Finland. Again, we found no differences by gender. (III; Vähämaa & Härmälä, 2011, pp. 82-84)

The findings suggested that the only significant predicting variable of mathematics perceptions in our bi-national statistical model was nationality. In a joint regression model, the previously found effect of high versus low achievement disappeared. As Table 11.1 shows below, in addition to nationality, only the abstractness and concreteness of number perceptions were significant predictors of "abstract" and "concrete" perceptions of mathematics.

*Logistic regression analysis of factors predicting respondents' abstract or concrete perception of mathematics*

| Factors | B | SE B | $e^B$ |
|---|---|---|---|
| Nationality: *R* is Norwegian | -1.519* | .585 | .219 |
| Gender: *R* is female | -.249 | .379 | .779 |
| Primary school high achievers | .349 | .382 | 1.418 |
| Secondary school high achievers | -.181 | .395 | .834 |
| Perception of numbers: *R* has abstract perception | .996** | .347 | 2.706 |
| Perception of mathematics applicability: *R* has abstract perception | .341 | .361 | 1.406 |
| Constant | -1.292 | | |

Note. $n = 201$, $X^2 = 26.923$, $p = .000$, $^*p < .05$, $^{**}p < .005$

*Table 11.1. Logistic regression of factors predicting abstract and concrete perception of mathematics*

What may explain the significance of this cultural variable? We hypothesized that the reason for differences in perceptions is due to the relevance of communication cultures that surround mathematics teaching in these two cultures. Presumably, Norwegians and Finns had, as a result of cultivation through schooling and social interactions, developed different understandings

of what "mathematics" is. We interpreted these findings indicating the function of a large-scale group epistemology–a set of shared beliefs about both rules of what mathematical knowledge should consist of as well as generic ontological beliefs of what mathematics is.

## 11.2 Abstract and Concrete Perceptions

The differences seem to be particular to one group as compared to the other. As such, they are likely to have developed through socialization and discourse over time, and are well-understood by the epistemic in-group, while the same perceptions can be seen as "erroneous" from the viewpoint of the epistemic out-group. Both groups have their idiosyncratic approaches which may be nonsensical to others. To understand them both, as we concluded, would be to pay attention to the socially powerful nature of the epistemic divergence and to treat both approaches as authentic and true for the group members (III; Vähämaa & Härmälä, 2011, pp. 85):

> Our data show that differing perceptions relating to mathematics do exist within and across cultures. These perceptions have significance in the mathematical thinking process. Perceptions, then, deserve to be discussed at all levels of mathematics education. As Sverre Wide has recently proposed, in any education the mere classical and logical falsifiability does not capture all the meaningful "errors" that students may make in their thinking (Wide, 2009, pp. 574). In fact, many times the error itself should be viewed as "right" or "correct." Some perceptions may be too rigid, or too muddled, although by some standards "correct."

If this idea is put into a visual form, we could situate the statistically distinct two epistemic communities as relatively distinct spheres of a Venn diagram in which the two communities interpret "math" differently. In Diagram 11.1, we see the two epistemic communities tapping into the idea of "math" from different perspectives. These two epistemic communities may understand each others' perceptions as "errors" or "wrong" and thus, accordingly, may misinterpret each other or encounter other communicative problems.

The approach presented here bears close relation to Piaget's model of assimilation and accommodation (see section *Volitionality of Knowing pp. 85*;

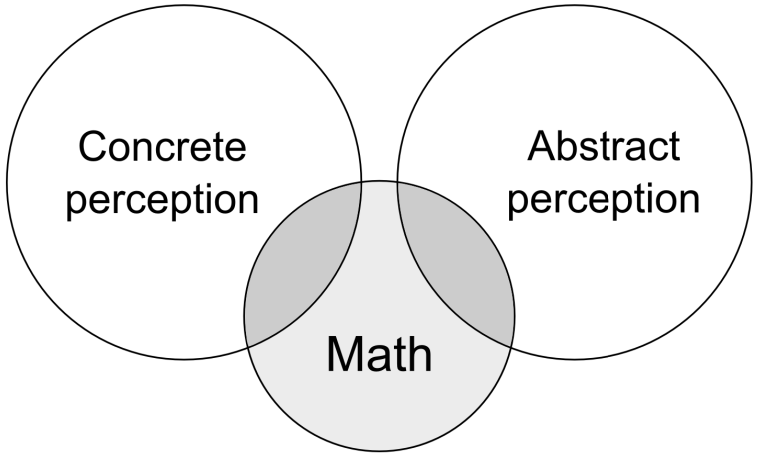



*Diagram 11.1. Concrete and abstract perceptions of mathematics portrayed as distinct epistemic communities in a Venn diagram.*

Piaget, 1950; Smedslund, 2012. pp. 295-296). The idea of accommodation– in the case of mathematics perceptions, the prospect of changing an already acquired perception–entails the paradox that it is only possible to accommodate what is already assimilated. Children, according to Piaget, can only learn about the world, as they see it within their momentary conceptual framework (Piaget, 1950). If applied to adult life, the conceptual framework of the presented two epistemic communities have the potential to limit further learning, or generally, to narrow one's view of mathematics.

## 11.3 Epistemic Differences Develop Over Time

It seems plausible that if the already assimilated mathematics perceptions are not explicated nor given the chance to be further discussed and elaborated, they have the potential to limit understanding that goes beyond the assimilated epistemic structure. Divergent epistemic communities are socially rooted and idiosyncratic. A measure of sensitivity, then, may be helpful while communicating across epistemic communities. This would, in part, contribute to the felt sense of being a rational and a credible group member, a facet of the epistemic calculus of groups.

A successful communicator would, then, take the divergent math perceptions as they are and regard the difference with dignity. By so doing the communicator would allow him/her to acceptably deviate (by posing alternative views on mathematics) from the group's norms, since he/she would regard the idiosyncratic features of the group as valid and true, and would therefore first gain *idiosyncrasy credit* (Hollander, 2006). Such credit is necessary in order to maintain fluid relations to the epistemic group members by allowing them to assess new ideas while maintaining a felt sense that the already acquired beliefs are not endangered or ridiculed.

In fact, even the belief that one is able and competent in the eyes of relevant others is known to boost mathematical performance (Aunola & Nurmi, 2004; Aunola et al. 2003, cited in Article III, Vähämaa & Härmälä, 2011, pp. 74). Self-efficacy, a belief of the ability of the self being able to achieve goals and complete tasks, combined with beliefs about the subject matter form mental constructs relevant to learning (Luszczynska & Schwarzer, 2005; Pajares & Miller, 1994). As intangible and socially constructed products of mind, these beliefs warrant the acknowledgement of both the self and others to become positively influential in an individual's life (Bandura, 1997).

Likewise, the accumulation of positive feedback from the others is crucial also in enabling an individual to gain necessary in-group idiosyncrasy credit, in order to be positively regarded when an attempt is made to challenge some existing beliefs. Edwin Hollander (1958) originally defined idiosyncrasy credit as an accumulation of positively disposed impressions residing in the perceptions of relevant others. In other words, it is the degree to which an individual may deviate from the common expectancies of the group (Hollander, 1958). Idiosyncrasy credit is a necessary functional status buffer, which permits the communicator to deviate from group expectations and, by engaging in innovative behaviors, to influence other in-group members to engage in the same behaviors. It is for these reasons, we suggest in the conclusions the following (III; Vähämaa & Härmälä, 2011, pp. 86):

> In the context of mathematics education, it is worthwhile to talk about differing perceptions and the possible causes of such differences in the classroom. Ideally such communication would be commonplace in different stages of education. Perceptions of mat-

hematics are accrued and built throughout the schooling years and, eventually, are carried into adulthood.

# 12 ARTICLE IV: Group Epistemologies and Public's Interest in Science

In the following section, I will discuss the conceptualizations and findings made in the fourth article of this thesis, "The Dilemma of Group Membership in the Internet Age: Public Knowledge as Preferred Misinformation", (Vähämaa & West, 2014, pp. 5-18). The article probes the function of group epistemologies as a function of media choice and large-scale socio-demographic variables, such as ethnicity, education and income. The analysis employed the 2008 topical module of the yearly American General Social Survey that dealt with science, different types of media use to be informed about science and other basic demographic information (e.g., gender, ethnic group, income). The research questions were the following (IV; Vähämaa & West, 2014, pp. 11):

> Do similar aspects of socioeconomic status and media choice alter opinions concerning science per se?
>
> While we know a good bit about the knowledge gap insofar as it alters what people know, does an individual's preferred medium for information, all other things considered, change the appeal of important topics like science?

Groups as well as individuals have preferences. Different media appeals to different people. Is the choice of media then automatically an epistemic choice, too? Group memberships can shape people's preferences, we assumed. When the preferences, then, guide people's media choices, these choices have epistemic consequences. Different media exposes groups to different information. From this viewpoint, group membership and media choice–simultaneously–can influence what the individual, in the final analysis, comes to know. It may even be the case, as the title of our paper posited, that preferences allow groups to foster some beliefs as valid information, while an alternative reading would regard those beliefs as misinformation.

Preferences, we go on to suggest, can in the long haul and after accumulated media exposure create divides of knowledge in the society. We conceptualize such a divide as a preferential divide.

Our key interest was in examining whether the repeated and volitional exposure (i.e., exposure based on preference) to chosen types of media coupled with socio-demographic variables would appear as a cultivation effect–an effect posited by cultivation theory in which knowledge and/or attitudes on the part of the audience grow and change over the course of time to reflect the media content to which the audience groups are exposed (Gerbner et al., 1978). Consequently, the expectation is that changes in attitudes and knowledge on the part of audience groupings would covary with variables that indicate different media affiliations.

## 12.1 Cultivation as an Aspect of Group Epistemology

Cultivation theory, first developed by George Gerbner and Larry Gross in the tradition of mass communication effects research, was initially aimed at examining how perceptions of violence in real life were distorted by television viewing. The audience came to think that the world is much more violent than it actually was due to the high levels of violence seen in television as a result of repeated media exposure (Gerbner, 1970; Gerbner et al., 1978). In essence, cultivation theory assumes that long-term exposure teaches or "cultivates" the individual to see the world differently from those with lesser amounts of media exposure and, accordingly, with the media content. Different facts come to be held as real and, thus, appear as truthful knowledge of the world beyond television. In the words of Cohen and Weimann (2000, pp. 99):

> The primary proposition of cultivation theory states that the more time people spend "living" in the television world, the more likely they are to believe that social reality is as it is portrayed on television.

Gerbner and colleagues (Gerbner et al., 1978) demonstrated how media exposure to highly violent media content made the audience more likely to think that the real world–that is, the world outside the television reality–is more violent than it actually was. Cultivation, then, in our present re-reading

from the viewpoint of group epistemologies renders itself as an aspect of a group epistemology in which socio-demographic group membership and media exposure are constituents of a way to see the world as well as a way to acquire facts of how the world works. Such audience membership, it is hypothesized, shapes in the long haul what the public comes to know of the world. In Article IV of the current thesis, this argument is examined as we look at how the public's interest in science is significantly predicted by their large-scale societal group membership and choice of media.

As cultivation theory initially focused on the effects of television viewing, we expected to see television as still having influential role along with the exposure to the Internet. While the Internet has gained prominence over television as the primary media of our time, the initial arguments by Gerbner, Gross, Morgan & Signorielli (1986) still seem to be valid. Gerbner and colleagues argued in the 1980s that, while religion or education had previously been greater influences on social trends, now "[t]elevision is the source of the most broadly shared images and messages in history...Television cultivates from infancy the very predispositions and preferences that used to be acquired from other primary sources ... The repetitive pattern of television's mass-produced messages and images forms the mainstream of a common symbolic environment. (Gerbner et al., 1986, pp. 17-40)"

These arguments still read as a timely analysis considering that the average American's most time-consuming free time activity is watching television (almost three hours a day) while seeing friends and people in general comes second by occupying about 40 minutes of leisure time and time spent on the Internet is about an hour (American Time Use Survey, 2013).[19] While the power of television seems to remain, the cultivation effect we saw in our study was a function of media exposure, much as a matter of socio-demographic characteristics of the audience. What we saw in our analysis was that the ethnic group membership, education, economic status and different patterns of media use predicted the levels of "interest in science." Cultivation, then, appears as a type of a chimeric effect, which is partially a function of large-scale societal groups and partially a function of media choice.

[19]The time spent on the Internet is not directly measured on the American Time Use Survey but was calculated here as a crude sum of time spent on the activities in which people use the Internet, such as reading emails.

We posit in the article that the interest in science is fundamentally shaped by tastes and habits of audiences as they choose different media. While the Internet poses the opportunity to review almost any type of data and read original scientific articles, the dilemma remains: What skills and experiences, beyond the ability to access different sources, enable individuals to assess the validity and relevance of the presented information and choose between media? To what extent should one engage in personal inquiry using the Internet and rely on the more mass produced media, such as television and radio broadcasts? We hypothesize that this dilemma has led the audiences to choose from different information largely based on the appeal of the content available. As we write (IV, Vähämaa & West, 2014, pp. 10):

> In an age of ubiquitous media, the variable which matters most is *appeal*. If people are uninterested in science or actively disdain it, then those people have placed themselves at risk of a knowledge gap which may be less tractable to amelioration by federal, state or private efforts to make information technologies available or to conduct public information campaigns. If people simply do not care for science, then it may be the case that there is a knowledge gap created by some sort of *preferential divide* rather than a socioeconomic divide. If this is the case, then modeling the social antecedents of interest in science may be a critical starting place in understanding the function of knowledge within mass media systems.

Since the choice of media is up to the audience members, then it also seems that the function of knowledge within mass media systems is at least as much a matter of preference as it is a matter of availability. This raises another important consideration. If the audiences prefer mass media over original scientific publications and journals, what is the nature of the mass mediated knowledge available to the audiences? The mass media on its part processes raw material using its own news values before delivering it to audiences. If the primary pathway to scientific discoveries for the masses goes through the mass media, the nature of journalism itself becomes a crucial epistemic question.

## 12.2 Nature of Journalism as an Aspect of Group Epistemology

In the article, we present studies that explicate the tendency of media to build an artificial middle ground of beliefs around matters which, from the viewpoint of the research or scientific community, may already be resolved but, due to the nature of journalism, appear to be unresolved. Consequently, debates continue in the media and create an artificial middle ground that appears as a "reasonable" centroid to the audience but may be nonexistent in scientific discourse. We discuss these centroids as reasonable and, thus, preferable views on knowledge on the part of the general public using as an example the journalism regarding the climate change controversy (IV, Vähämaa & West, 2014, pp. 1).

> While what actually exists in the public realm are people who deny the existence of anthropogenic climate change, and those who accept its existence, what seems to exist in the public mind concerning the opinions of others is this "artificial centroid": the notion that there is some sort of "middle ground" in which informed individuals *as a whole* believe there is still some scientific debate being waged about whether climate change is anthropogenic or not. There is not such "middle ground", nor is there such a corpus of "informed individuals" who are reserving their judgement for more information. ... But the actions of the media attempting to "play fair" create that impression among those who are *not* well informed on scientific matters.

While journalists and documentarists may give their best efforts to report on science, they are themselves guided by the news and broadcast values inherent in their craft and have their own professional epistemologies, as will be discussed in more detail in the final article of the present work (V; Vähämaa & West, 2015; for a recent review of journalists' biases on climate change reporting see Kunelius, 2012 and Jones & Song, 2014). Audiences of mass media, then, choose from scientific information already once processed. These considerations point out that the cultivation effect does not draw its information raw material from a vacuum, but rather uses information that is already reframed by the epistemic standards of the mass media. This processed nature of the information that "flows" to the audiences posits an important challenge to audiences that seek out factual information. Newscasts

and documentaries do not develop in a vacuum but build on the epistemic standards present in professional communities.

### 12.2.1 Findings

Our findings give some initial support to the idea that cultivation is a joint function of socio-demographics and media exposure. We found that education does play a key role in the development of interest in science, although in a way that may be counterintuitive. The epistemic appeal of science as portrayed in the mass media seems be higher for the less educated; unexpectedly, a higher level of interest in science is conversely correlated with education and income. The more educated and wealthier the audience member is, the less interest he/she has towards science in general. We discuss this surprising fact in the article by pointing that science may be construed as a social problem itself to the higher educated and, thus, less as a solution to personal and societal issues (see IV; Vähämaa & West, 2014, pp. 15). It may also be that "science" as a public construct is not epistemically appealing to the higher educated or to opinion leaders of groups with higher educational and income levels. Also, an individual's preferred medium for information seems to affect the felt appeal of science.

Together, these findings point to the role that different socio-economic groups have in cultivating idiosyncratic perceptions. Table 12.1 presents the profiles of audience groups with higher and lower interests in science respectively (IV; Vähämaa & West, 2014, pp. 14).

*Table 12.1. Regression of socioeconomic variables, news sources, and overall attitude concerning science on interest in science*

| | Coefficient | s.e. | T |
|---|---|---|---|
| Education | -.029 | .008 | -3.6 * |
| Income | -.013 | .010 | -1.3 |
| Is R White? | -.265 | -.043 | -6.0 * |
| Is R Male? | -.045 | .052 | -0.8 |
| Internet primary info source | -.151 | .076 | -1.9 * |
| TV or radio primary source | -.145 | .059 | -2.5 * |
| Internet primary science source | .098 | .067 | 1.4 |
| TV or radio primary science source | .184 | .056 | 3.2 * |
| Attitude toward science | .375 | .030 | 12.4 * |
| N = 1263, F(9, 1253 = 28.48), p=.000*, R2 = .1698. * = significant at the .05 level. | | | |

Note: Lower levels of education, a more positive attitude toward science, the use of television or radio as a primary science source, *not* using the Internet as a primary source of information, *not* using television or radio as a primary source of information, and *not* being White were all significant predictors of higher levels of interest in science. These factors predicted 17 percent of the observed variance, and the model was significant at the .01 level.

The average profile of those with higher levels of interest in science consists of lower education, lower income, an ethnicity other than Caucasian, neither using Internet nor TV or radio as the overall primary information source in general, but using TV or radio as a primary source for scientific information. We further analyzed these regression variables in a factor analysis (IV, Vähämaa & West, 2014, pp. 14). We derived "high interest in science" and "low interest in science" factors, which revealed that those with higher levels of interest in science also seek more science information from the Internet than those with less interest. An individual, it is deduced, who is at some point a passive television audience member also engages in more deliberate information-seeking on the Internet (IV, Vähämaa & West, 2014, pp. 15).

We interpret the statistically observable grouping factors as elements of a cultivation effect. A high interest in science is seen as a group epistemology constituted by media exposure and socio-demographic variables. In particular, the group variables indicate that being a member of a television or radio audience and having membership in a less privileged societal group (i.e., low income, low education) fosters thinking that science is interesting. Interest

in science varies significantly and reflects the value of such knowledge for the group members as a result of cultivation. The outcome is the emergence of epistemic groups. As we conclude in the paper (IV; Vähämaa & West, 2014, pp. 15-16):

> In sum, then, interest in science appears to be predicted by socio-economic variables, including media use. This leads us to conclude that there exist large social groupings, tractable to empirical study, which have divergent epistemic stances on scientific issues; we contend that to think that science "matters", or to think that science does "not matter", is to have radically different conceptualizations of how to think about the world. At that point, an empirical study has lent at least some credence to the notion of epistemic groups, and we believe that we can hence argue for the notion of a positivistic approach to the study of group epistemologies.

# 13 ARTICLE V: Group Epistemologies as Rationales of Political Communication

## 13.1 Backdrop of the Study

Next, while moving from the American context to the European, the locus of research simultaneously moves from the domains of lecture halls or mass media audiences to a consideration of how group epistemologies function in the context of political communication. In the following section, I present the underpinnings and findings of the third empirical research project that resulted in article V, now in print in the *Nordicom Review*: "They Say One Thing and Mean Another"–How Differences in In-Group Understandings on Key Goals Shape Political Knowledge: An International Comparison of Politicians and Journalists (Article V; Vähämaa & West, 2015). The paper was produced as a part of a larger European research project that studied political journalists and politicians through a pan-European survey *Political Communication Cultures in Western Europe–Attitudes of Political Actors and Journalists in Nine Countries*, resulting in a book by the same name (Pfetsch, 2014).

Here, the attitudes of politicians and political journalists regarding their goals of political communication are seen as constituents of idiosyncratic professional group epistemologies. The goal of analysis is to tap into the concrete mechanisms of knowledge production of the political communication elite using confirmatory factor analysis (CFA). The assumption is that the two groups are constituents of two epistemic communities that, in the framework of CFA, would appear as divergent latent factors idiosyncratic to each group. The theoretical and abstracted framework of the analysis is the notion of the public sphere–a sphere of public talk in which elites play a fundamental role (Habermas, 1962). Both politicians and political journalists enable the function of the Habermasian public sphere by providing the basic bits of political knowledge to the public. The two groups of elites are seen as holding key roles, or functions, in the formation of a public sphere and, as such, contribute significantly to the construction of political knowledge.

## 13.2 Group Goals and Knowledge

The public sphere–as the conceptualization goes–contains the basic knowledge of public affairs that allows people, at least in principle, to know enough to reason about political issues, cast their votes and engage in meaningful discourse about public issues (Benson, 2009). In the final analysis, politicians' and political journalists' group-based goals have both immediate professional consequences (e.g., allowing them to run their daily errands and duties as part of their daily jobs) as well as consequences in terms of the wider public (e.g., communicating to the public through media). The outcome of these elite interactions is political knowledge as it is represented to the public. The in-group driven goals of communication, idiosyncratic to each professional epistemic community, shape over the long term the public understanding of what counts as political knowledge. As we suggest in the paper, the idea of a public sphere makes little sense without input from politicians and journalists (Article V; Vähämaa & West, 2015, pp. 5):

> In the modern age, the goal of the politician is to conceal information pursuant to the implementation of governmental policy, while the journalist sees herself as a whistle-blower (Sloan & Parcel, 2002). In the big picture, both the concept of a political journalist and that of a politician are necessary for the functioning

> of the public sphere. Indeed, we argue that *only* armed with the conceptualizations of a political journalist and a politician, with goals that are to some extent inimical, does the idea of a fully functioning public sphere (die öffentlichkeit) become feasible.

Considering the importance of politicians and political journalists in informing the general public, the question arises whether these groups' professional goals in some way distort knowledge? Would inescapable biases in knowledge not be portrayed by politicians and political journalists for the sheer reason that the goals of these two groups are not the same? In short, the answer is yes. However, these biases build upon the goal perceptions of public actors–politicians and political journalists are by definition open about their goals–and, as such, their conflicting and converging elements can be studied through methods of social science. Research can add further understanding of communicative biases as well as increase awareness of them.

It has been proposed thus far that much, if not all, of our knowledge is biased–in the sense of being guided by social rules–for the reasons of principle; we can only reach knowledge through being members in various epistemic communities. To acknowledge this premise is not to take a negative outlook on the possibilities of unbiased political communication. Rather, it is a call for a comparative research approach. Resulting diagnostic information might raise awareness of the role of epistemic communities in communication. It might also mitigate the influence of biases that occur as misunderstandings and as different ways of defining and understanding the topics and goals of political communication. As we write (Article V; Vähämaa & West, 2015, pp. 6):

> The basic demand of human understanding is a necessary prerequisite of a large-scale public sphere. Following Adut (2012), we understand the public sphere as the semiotic domain in which topics have their *salience raised*, such that consideration can take place concerning their resolution. Yet a discourse in any meaningful sense cannot follow the raising of salience of topics if there is disagreement about the definitions of topics (Adut, 2012).

## 13.3 Comparative Data across Nine Countries

The data employed in the analysis comes from nine European countries. The countries were Austria, Finland, France, Denmark, Germany, Slovenia, Spain, Sweden and Switzerland. The joint project was conducted as part of a European Union's program called EUROCORES ECRP 2006 Programme. Funding was provided by the respective national research councils of the participating countries. Altogether, some 2,090 political journalists and national-level politicians in nine European countries were surveyed between 2007 and 2010 (Maurer & Vähämaa 2014, pp. 59). [20]

A book, *Political Communication Cultures in Western Europe–Attitudes of Political Actors and Journalists in Nine Countries*, based on the study was recently published and, while it did not focus directly on the aspect of group epistemologies, it was shown that smooth functioning of political communication requires a reasonable amount of professional coherence within the professional groups (i.e., coherence of goal perceptions within the in-group) as well as a reasonable amount of convergence in the perception of the political communication system as a whole (i.e., coherence of goal perceptions between the in-group and out-group) (Pfetsch et al. 2014, pp. 78). It was, however, seen likely that professional groups have higher levels of similarity of thought, even internationally. As Pfetsch and colleagues (2014, pp. 80) posit:

> Thus we assume that output strategies are increasingly suited to distinguish professional cultures rather than national cultures, while for the self dimension, group differences naturally prevail over country differences.

By output strategies, Pfetsch means the tactics which politicians vis-à-vis political journalists use while trying to engage the imagined public through various forms of media practices, such as partaking in talk shows, giving speeches in the parliament, writing news, conducting interviews in a live broadcast, and so on (Pfetsch, 2014). By the self dimension, it is meant that

[20] The comparative study was carried out by a group of principal investigators from participating European countries. The principal investigator for the Finnish part of the study was professor Tom Moring at the University of Helsinki, Finland, who later became my dissertation advisor. I worked in the project as a researcher.

the perceptions of politicians' vis-à-vis political journalists are congruent within the in-group and vice versa, even transnationally (Pfetsch, 2014). Here, we hypothesize that also the perceptions of the goals of the out-group are internationally shared. The question, however, remains whether politicians and politicians would be too far apart in their own professional goal perceptions and those of the out-group, so that their actions would be understandable only in their own professional group? Or, given the diversity of political history and landscape in the surveyed European countries, would country differences actually override the differences in goal perceptions that come with the professional group memberships? The questions require an empirical answer.

Preceding research gives initial responses to both of these questions. As a response to the first, it has been recently posited that when it comes to party identity, or partisanship, people have strong tendencies to cling to the views idiosyncratic to own political affiliations (Ramirez & Erickson, 2014). Research shows (Ramirez & Erickson, 2014) that the phenomenon is strong to the extent that information initially held "true" by the standards of own partisanship is typically not disqualified, even when opposing views are presented as more evidence-based and commonly accepted. These findings give reason to extrapolate that what is held as "true" knowledge among politicians, who openly promote their own party and its political views, would quite naturally for journalists' professional reasons be held as suspicious or "biased" from the viewpoint of journalists. From this perspective, it seems likely that the two groups would diverge in their perceptions of each other's goals, at least in the framework of individual countries.

Also, research suggests that symbolic group memberships, such as professional group membership, may affect people's metacognitive assessments in a way that imagined membership strengthens group-based thinking (Gross, Holtz, & Miller, 1995). Research shows that symbolic group identities tend to increase the amount of projected consensus around a person's belief (Gross, Holtz, & Miller, 1995, pp. 223-224). For instance, when politicians and political journalists respond to a survey that inquires about in-group perceptions, the subjects would make mental and influential references to their imagined professional in-group. This type of mental referencing, research suggests, is likely to lead politicians and political journalists to assume that like-minded professional colleagues share their goal perceptions and might push the survey responses to be distinctively idiosyncratic (Gross, Holtz, & Miller, 1995).

In response to the second question, some previous findings specifically on journalists hint that both country differences and cross-cultural professional similarities are conducive to the existing professional journalism culture. For instance, Esser and Umbricht (2013) found in their large-scale trans-national content analysis evidence for a U.S. model, an Italian model, and a Germanic model of journalism. Each of those, arising out of differing historical imperatives, is at once cross-national (as we suggest herein), but also has its own regional "flavor." Hallin and Mancini (2004) also suggest that the standards of journalism are fairly similar in modern pluralistic democracies and, therefore, give reason to assume that the goal perceptions at least in the group of political journalists would be convergent.

### 13.3.1 Research Questions

The remaining task for us, thus, was to test these assumptions with a cross-cultural sample that included both politicians and political journalists. In modeling the 2,090 responses, we employed multiple group confirmatory factor (CFA) analysis to test the assumptions of international similarity versus divergence in thought. The data was analyzed with *MPLUS* statistics software. The following two hypotheses were tested (V; Vähämaa & West, 2015, pp. 12-13):

> Hypothesis 1: (null hypothesis) Groups of journalists understand the same goals in the same way with politicians–and form one single confirmable factor. Thus, there is no separate "group epistemology" and there is mutual understanding of the terminology of goals among politicians and political journalists. However, if the two groups do not share the same understanding regarding their goals, then they do not share an epistemology.
>
> Hypothesis 2: If politicians and political journalists understand their goals in a different way they do so because they have different group memberships–they do not understand the terminology in the same way. Therefore, they do not show similarity on the quantitative measures and form two separate confirmed factors as constituents of responses by political journalists and politicians.

Two separate factors emerge because of their membership in the journalist or politician group, respectively.

## 13.4 Conceptualizing Political Communication Goals as a Group Epistemology

The empirical inquiry focuses on the goal perceptions of politicians and political journalists. These two groups were asked to evaluate their own goals as well as the goals of the other profession. For instance, the question "How important is to investigate government claims and serve as a watchdog of political elites?" was posed and participants were asked to assess the validity of claims like "Politicians mainly communicate through media to influence political decision-making." (V; Vähämaa & West, 2015, pp. 13-14) To what extent can goal perceptions such as these be seen as guidelines of group-based epistemologies? The answer goes as follows. For the elite actors of political communication, the goals of their actions are also their reasons to communicate in the first place. Given that this claim is correct, it allows us to conceptualize the goals as reasons to communicate, following the principal idea of Habermasian communicative action, which makes communication possible since both implicit and explicit reasons for utterances are given and asked for by the communicators (Habermas, 1984, pp. 99).[21]

Consequently, the reasons underpinning political communication are the rules of thumb in crafting knowledge out of the social world. The communicative reasons given to political communication are the constituents of group epistemologies. In order to be able to successfully communicate in public–i.e., to make intersubjectivity possible by "making sense" to oneself and to others–the elite actors must merge the understanding of oneself with the understanding of others and the public as a whole (Habermas, 1994, pp 115-116). A politician may ask (in her mind): Why did she ask that question? What is the reason for a journalist's inquiry? For what reasons would people vote for me? Likewise, a journalist may ask (in her mind): What are the po-

[21] According to Habermas (1984, pp. 99): "The concept of communicative action presupposes language as the medium for a kind of reaching understanding, in the course of which participants, through relating to a world, reciprocally raise validity claims that can be accepted or contested." In the context of political elite communication, these validity claims build upon reciprocally understood goals of each other–even when the value of the out-group's goal may be contested.

liticians' underlying reasons for doing this or saying that? For what reason should I run a newscast about this issue? Is this matter so pressing that I, as a journalist, should find out more about it? Such questions can go unuttered in the interactions between politicians and political journalists but they, nonetheless, demonstrate the nature of political communication in which some explicable rules can be pointed out to a lay person and to an expert alike.

### 13.4.1 Survey Items and the Epistemic Calculus

In the survey, some of the key goals of political communication were explicitly presented to politicians and political journalists for reciprocal evaluation (Pfetsch, 2014). The goals of political communication, conceptualized as the rules-of-thumb like group epistemology, can be directly related to the core features of the epistemic calculus of groups. Table 13.1 presents the features of goals in political communication in comparison with the features of the epistemic calculus of groups. All of the survey items carry with them the different features of the epistemic calculus (for all the items see V; Vähämaa & West, 2015, pp. 13). For the sake of clarity just one survey item is presented in relation to one related feature of epistemic calculus.

*Table 13.1. Survey items, their corresponding features in the epistemic calculus of groups, and what the item tells about political knowledge*

| Survey item | Related feature of the epistemic calculus | What the item tells about political knowledge? |
|---|---|---|
| **"When covering politics, how important is it to you to give equal voice to all sides?"** | The sense that one possesses an ability to discuss and pursue truth, and to review and select different perceptions | Knowing different perceptions allows the elite actors and the public to see different reasons behind political action |
| **"How strongly would you agree that politicians primarily appear in the media to promote their party's political position?"** | The sense of being a functional, accepted, and credible member of the group | Explicates the political in-group's status and relevance as a primary reason to communicate to the public |
| **"Politicians mainly appear in the media to demonstrate personal knowledge and experience"** | The sense of an ability to maintain personal affective stability and to achieve happiness | Helps the public to evaluate the extent to which politicians think of themselves as having political solutions and being relevant individuals as part of the political scene |

The table demonstrates how communicative goals can be conceptualized as epistemic goals–a type of rationale, i.e., a reasoned exposition of principles and of political communication–for elite actors. As the comparison with the epistemic calculus of groups shows, the rationale of political communication consists of both intellectual and rational goals. It also includes more emotionally based reasons to maintain professional self-esteem, fluid and positive relations within the in-group and with the members of the professional out-group.

## 13.5 Explicating Epistemic Divergence between Professional Groups

While the conceptualization of epistemic goals may be an instructive exercise, to what extent are these goals mutually understood and shared by the

professional elite? As we hypothesized, there is the possibility that the portrayed epistemic goals are differently understood by the two groups and, as such, would pose a significant threat to meaningful political communication by creating confusion, talk cross purposes, undermining of each other's motives, and so on. We framed this worry as a threat to the rational-critical debate within the public sphere (V; Vähämaa & West, 2015, pp. 6). The results of empirical inquiry into this concern confirmed the existence of divergence in the ways politicians and political journalists as pan-European groups understand their reciprocal professional goals.

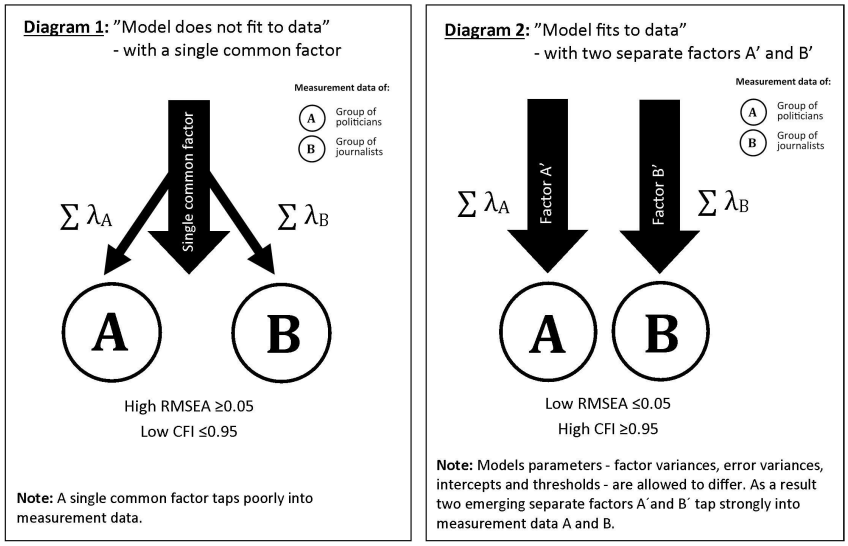
Null Hypothesis 1 was rejected and Hypothesis 2 was statistically supported. Across the nine European countries, politicians and political journalists shared common meanings within their own professional in-groups transnationally but understood the items differently in comparison with the out-group profession across nations. As we write in the article (Vähämaa & West, 2015, pp. 21):

> Different but strong common latent factors were found for two professional groups. We see this as a proof of internationally coherent professional goals that create epistemic communities. The principal goals of professional communication make up the foundation of political knowledge. Thus, the division of group-specific communication goals set up the makings of a group epistemology idiosyncratic to politicians and political journalists, respectively.

The following diagrams demonstrate how these strong common latent factors were found for two professional groups. First, a "confirmation" all of the responses into a single meta-factor was attempted, as seen in Diagram 13.1. The model was crafted with the assumption that responses would be somewhat different but similar enough due to the cohesion that must exist internationally among politicians and political journalists since they–all differences acknowledged–interact frequently and need each other to meet professional ends. Yet, the hypothesized unison of thought was not there.

Then, as seen in Diagram 13.2, after the model parameters were set to roam freely, two separate factors emerged for politicians that came from all the nine countries. Likewise, a factor emerged for political journalists co-

ming from the diverse nine countries.[22] Politicians and political journalists were rigorously canonical in their responses no matter where they came from: A political journalist from Madrid was of similar mind as a colleague from Helsinki. The same can be said of the politicians. A Swedish Member of Parliament could be easily aligned with a colleague from Paris if the question was whether they would approach political communication on the same terms. The rationales of communication goals, conceptualized as in-group based *group epistemologies*, were divergent for the two communities.




*Diagrams 13.1 and 13.2 depicting the confirmatory factor analysis for single and multiple groups.*

The findings presented here corroborate findings presented by other members on the international research project (Moring & Pfetsch 2014, pp. 296-297). Moring and Pfetsch argue that the issue of "talking cross purposes" is, to some extent, expected but may potentially pose a threat on the de-

[22] The extent and robustness of this effect is exceptional since among some other professionals, such a medical doctors, country-specific differences are very likely to occur around important epistemic issues about health and diet (see Leeman et al., 2011).

mocratic function of political communication (Moring & Pfetsch 2014, pp. 296-207):

> ...it is not surprising that each group did not consent to the self-image of the other, which could be considered as a fundamental ingredient in the journalist-politician relationship. Nevertheless, the distance between the two groups gave rise to concern. The findings revealed an apparent competition between the two groups with regard to their respective role in serving democracy.'

This competition between professions, conceptualized here as the epistemic divergence between professions, is an important issue to be explicated through research. Have the two groups gone too far in their specialized language and expertise that they, in fact, talk cross purposes while their intentions in serving democracy may be the same? If there is no recourse to common language for political elite groups, how then could a lay member of the public begin to understand the intentions of the political elite? For reasons raised by these questions, the task of explicating the directions of epistemic divergence renders itself an important inquiry. The teleological pressures–pressures of serving the in-group goals–might create an obstacle to the communications across groups. Here, the worry remains that the common epistemic goal of serving democratic engagement and well-informed citizenship might get derailed by strong group-based biases.

## 13.6 Implications on Future Research

There is, then, an important prospect of further examining the function of professional epistemic groups in international political communication through various themes and topics. Would systematic epistemic divergence occur in politicians and political journalists in some other contexts beyond professional goals? To what extent, for instance, political communication regarding the finances of Europen Union is influenced by the prevalence of strong epistemic communities in the groups of political journalists and politicians respectively? Does the divergence of epistemic goals lead to the erroneous framing of important political issues?

For example, would a political journalist turn a blind eye to a perspective promoted by a politician only for the reason that they would misunderstand

the other's fundamental goals while intending to serve democracy? Belonging to a group, as posited, has powerful and significant epistemic consequences. Belonging to a group provides the individual with a collective group-based epistemic rationale. Whether the epistemic function of groups is seen as a by-product of the group interaction–a small question in social research–or one of the core properties of social interaction–one of the big questions in social research–is a matter of contention.

# 14 Discussion

## 14.1 Key Theoretical Concepts in Social Research of Knowledge

In the beginning of the dissertation synthesis I presented the key metatheoretical conceptualizations to provide the nonempirical and philosophical backdrop for the rest of the research. Likewise, a review of the key theoretical concepts that lend themselves to an empirical scrutiny was given. I maintained that the reliance on common sense and language are metatheoretically important prerequisites in studying knowledge acquisition and circulation in the social world. The following sections summarize the metatheoretical commitments and readdress the most important theoretical concepts and empirical substantiations of the thesis. I will also argue for the research approach in the social research on knowledge that combines conceptual analysis and empirical explication.

### 14.1.1 Common sense and language

First, starting from the concepts that operate at the metatheoretical level, let us turn back to the notion of common sense. Common sense, as posited in Jan Smedslund's (1988) psycho-logic, provides the individual and groups with necessary knowledge, enabling them to get along with each other and make enough sense of the social world to be able to get through at least the most basic of interactions with ease and fluidity (Smedslund, 1988; 2012).

Common sense is conceptualized by Smedslund (1988) as a culture that

is the collective source of knowledge and rationality. To view human rationality as a function of common sense highlights the fact that *most* of what people know is fundamentally social and acquired through socialization.

Common sense, as the word itself suggests, is *common* in the sense that it is sensibility acquired from the collective social world to which there is shared access. It is not a hermetic cognitive effort made in the isolation of an individual mind. People do not need a specialized skill to acquire common sense, they only need a common language, as both Smedslund (1988) and Habermas (1994, pp. 116) suggest. To attain the ability of everyday reasoning, no formal training in formal reasoning is required–as was demonstrated in the introduction with the example of propositional logic. To occur, however, common sense requires people to interact and talk with one another. The pathway of socialization takes people to common sense.

### 14.1.2 Volitionality of Knowing

In my research I have addressed the question that if common sense is so easily attained and common, does it totally limit our thinking and reasoning since it is so conventional and culturally adopted? Does it make sense at all to see knowledge acquisition as a volitional and intentional process in the group context?

In response, I have turned to Piaget's distinction between accommodation and assimilation. Piaget (1950; 1972) proposed the idea of assimilation–the process in which experiences take the form of knowledge and become incorporated in individuals' mind as steadfast schemata–as the end product of socialization.

As Smedslund (2012, pp. 296) posits, the assimilated schemes are necessary for a functioning individual but the acquired schemata also constrains what becomes to be held as knowledge. We accommodate, or learn, in relation to what is already assimilated. Therefore, we can learn about the world only in the way that we interpret or understand it at a given time, and in relation to already assimilated common sense (Smedslund, 2012, pp. 296). Acquisition of new knowledge is volitional and possible but is constrained by what is already held as knowledge. Here, the striking importance of the

groups on knowing becomes explicit.

### 14.1.3 Importance of the Social Groups–Math Perceptions, Public Interest in Science and Political Knowledge

To point out the relevance of existing knowledge is not to put down the potential of analytic reasoning, but rather to make the point that knowing does not happen in a vacuum. It takes place in the context of what is already held as knowledge. That is why it is so important to study the social context. Much of what we hold as knowledge is provided by our social surroundings. In the case of the mathematics perceptions, for instance, we see the way in which *cultural* context may influence the acquisition and circulation of perceptions of what is known as math (III; Vähämaa & Härmälä, 2011).

The empirical findings suggested that the only significant predicting variable of mathematics perceptions in a sample of Norwegian and Finnish university students was nationality. Interestingly, in a cross-cultural regression model, even the effect of high versus low achievement disappeared. Likewise, there were no differences based in neither in the classic sociodemographics such as age and gender nor the field of study (the major discipline of the student).

The study conducted in Norway and Finland suggested that, in order to acquire a new scheme–that is, a new perception–students would need an exposure to social surrounding in which a rival perception is passed on as knowledge. Such an exposure would necessitate inter-group communication across epistemic communities that revolve, the study suggested, around different perceptions of mathematics.

In a similar vein, in the public's interest in science study (IV; Vähämaa & West, 2014, pp. 11) it was demonstrated that the idea of *cultivation* is a joint function of socio-demographics and media exposure. The study found that education does play a key role in the development of interest in science, although in a way that may be counterintuitive. The epistemic appeal of science as portrayed in the mass media is higher for the less educated; unexpectedly, a higher level of interest in science is conversely correlated with education and income. The more educated and wealthier the audience member is, the

less interest he/she has towards science in general. Science may be construed as a social problem itself to the higher educated and, thus, less as a solution to personal and societal issues (see IV; Vähämaa & West, 2014, pp. 15). Possibly "science" as a public construct is not epistemically attractive to the higher educated or to opinion leaders of groups with higher educational and income levels. In addition, an individual's preferred medium for information seems to affect the felt appeal of science.

The research showed that interest in science is predicted by socio-economic variables, including media use. Large social groupings differ in their epistemic stances on scientific issues. To think that science "matters", or to think that science does "not matter", is a sweeping difference in thinking about the world. Here, we have another case of epistemic groups–groups that come to hold something as knowledge through different paths.

Finally, in the comparative study of communicative goals of politicians and political journalists (Article V; Vähämaa & West, 2015) it was demonstrated that group epistemologies among professional communities can be so robust and well developed that they can *override* cultural differences. Across the nine European countries we studied, politicians and political journalists shared common meanings within their own professional in-groups transnationally but understood the items differently in comparison with the out-group profession across nations. Internationally coherent professional goals provide teleological, or goal-oriented, in-group pressure that creates epistemic communities. Here, the principal goals of professional communication are conducive to group-specific political knowledge. What is held as knowledge in one professional community might be understood as an opinion or even nonsense in the other community.

## 14.2 Epistemic Communities

The approach taken in the dissertation towards the study of the social psychology of knowledge has focused on group *processes* conducive to knowledge. The focus could have alternatively been on *products*, the group beliefs that become viewed as knowledge. Interestingly, as it turns out, the conceptually important distinction between processes and products is often muddled in the social realities of groups. Processes and products by necessity mix in group contexts because, in the group discourse, the felt senses of self-esteem,

rationality and goal-orientation rely on common sense and language, both of which are elements of understanding *already* packed with knowledge.

The studies conclude that individuals' desires for group acceptance and to appear as rational, as well as overall socialization and cultivation as an outcome of repeated interaction, are processes that have important epistemic consequences for the group members. While these processes serve important social functions per se, they also direct the course of groups' knowledge leading to, what appears to be at the onset casual groups, actual epistemic communities.

The articles I and II point that the teleological pressures that hold the group together are also conducive to knowledge. If this idea holds, then, the diversity of groups inevitably leads to a diversity of epistemic standards and conflicting notions of what is held as knowledge. Thus, the notion of an epistemic community opens the door to the inquiry of what is *not* common sense. The focus shifts away from common sense to what is sensical to a particular group.

### 14.2.1 Epistemic Difference and the Role of Research

The worry that is evoked by the differences of epistemic communities boils down to matters of communication. Can there be meaningful communication whatsoever across epistemic difference? Or put into conceptual language: Would there be a potential recourse to mutually understandable language given the differences of group epistemologies? Do idiosyncratic group epistemologies, in which the reasons for communication for the self (the ingroup) and the other (the outgroup) are seen as incommensurable, doom the possibility of sensible communication?

One unintentional and necessary outcome–a type of side-product–of groups is that they create the outgroup as they emerge. From this it follows that communication across groups is likely to take more effort than within the group. Thus, at one point invisible or only intuitively felt epistemic difference can be brought into the framework of reflective awareness via explication. This type of explication of epistemic difference reveals something remarkable about the nature of natural language. It is possible to turn back to common and *uns-*

*pecialized* language even on topics and in contexts that are highly specialized, such as professional language regarding complex issues in politics. In other words, a turn back to common sense is possible through natural language. Researchers, as Habermas suggests, can rely on the unspecialized nature of language (Habermas, 1994, pp. 116):

> ...the eminent capability and productivity of socially circulating everyday speech, which (apart from the only other anthropological monopoly, the human hand) is the only faculty that has grown adequate to extraordinarily complex tasks precisely because it remained nonspecialized, because it hasn't been forced to specialize.

From the Habermas' (1994) and Honneth's (1995) point of view we do not, in principle, live in worlds too far apart to be unable to understand each other. We can use language to ask questions, take advantage of intersubjectivity and reflect the reasons of actions. Ideally, then, knowledge is also readily available to everyone since it is–again, in principle–captured in the free flow of conversation, not bound to any material or social conditions (Fuller, 1988, pp. 271). Such idylls of free and always unbiased everyday speech (e.g., Habermasian ideal speech situation) and unhindered flow of *all* knowledge in casual conversation are surely ideal images of social reality but, nonetheless, theoretically important frames of what goes on in actual social psychological practice (Fuller, 1988, pp. 271).

In practice, it seems easy to imagine that recourse to common language does not always happen. The subjects involved in interaction simply may not have the will to take intentional efforts to gain a bridging epistemology across groups. Importantly, research has pointed out that many specialized systems of knowledge (e.g. journalism, science, juries) are *not* meant to be similar in their epistemological reasoning patterns and that these differences are due to intentional planning (Doise et al., 1993; Pirttilä-Backman & Hakanen, 1994). However, the empirical cases of perceptions of mathematics (article III), public's attitudes towards science (article IV), and goals of political communicators (article V) all pointed out that epistemic difference is tractable through social science methods. This type of explication gives an important chance to improve communication by making explicit the differences in understanding that arise from the differences in group epistemologies and not just from casual confusions and misunderstandings in the use of

terminology.

## 14.3 Improving Communication Ethically

The overall conclusion may be drawn that, to better communicate about objects of knowledge (the end products of epistemic processes), it is important to emphasize the significance of groups in knowing, in order to enhance public debate on matters that rely on epistemic justification and scientific knowledge. For instance, individuals may not be reflectively aware of the influence of their in-groups to their thinking. The explication of groups' epistemological stances and commitments can be served through research. From the epistemological viewpoint this type of explicative process has a *positive epistemic function*: something that is typically off radar, or unspoken, becomes part of an intelligible and intentional conversation. Here, the case of politicians and political journalists (article V) is a good example. Evidence from groups of politicians and political journalists shows that epistemic communities often understand the same goals for communication in a manner so different that an explication of these differences may be a big help.

Of the presented empirical studies the research among politicians and political journalists is an example of how research may support such a positive epistemic function. Applying the positive epistemic function via social scientific research also means that issues which are *already part of dialogue* but without the proper status of knowledge–framed and viewed as mere feelings or mere beliefs–become conceptualized as knowledge. Here, the empirical case of Norwegian and Finnish university students' perceptions of mathematics is a good example (article III). Students with similar levels of achievement felt differently about mathematics and could have different kind of perceptions of what mathematics *is*. The research suggested that these perceptions, oftentimes dubbed as mere beliefs or feelings, have epistemic status for those who hold the beliefs even if those perceptions do not have the epistemic status according to an epistemology adopted by the "outgroup." Alternatively, a researcher may apply a *reductionist epistemic function* in her research. Here, an epistemological orthodoxy is adopted as an a priori yard stick to measure the quality of empirical epistemological practices in which people engage. Therefore, a reductionist, for reasons of principle, fails to see the positive epistemic implications (e.g. group coherence may bring members to challen-

ge own previous views) of group norms and beliefs.

## 14.4 Epistemic Calculus of Groups

From the articles and examples presented so far, one primary conclusion can be drawn: belonging to groups guides group epistemologies and grants individuals with beliefs that are considered to be knowledge. My research has proposed that the rise of a group epistemology–the process where the social nature of group sets standards for knowing–can be intentional but it does not have to be. The birth of a group epistemology is oftentimes a subtle process of which the group members are not directly aware. For instance, the article III demonstrated surprisingly that in two Nordic countries, in many ways similar, the perceptions of a fairly universal topic such as mathematics can develop in very different directions. In these two cultures the intentional and unintentional group processes can work simultaneously and towards the same direction (e.g., group members intentionally pursue in-group unity for social ends and, by doing so, unintentionally reach *epistemic* ends as well).

Every group has socially embedded rules of belonging and those "rules" are the primary emotional, cognitive and discursive foundations of knowledge acquisition and circulation in the group context. As was argued, groups exist and matter for their members, not only for social ends, but also for epistemological ends. The epistemic calculus of groups strands together the most relevant features of group processes, which together are conducive to knowledge. These social processes, found in previous empirical and conceptual studies, were reiterated and summarized as felt senses to which individuals adhere as they operate in group contexts (see section *The Epistemic Calculus of Groups* pp. 37).

While social groups do not always deliberately aspire to epistemic ends, they must do so at least on some principal level of discourse as Habermas (1994, pp. 111) suggests. As maintained in the article II, group interactions necessarily rely on some basic measure of logicality embedded in language. The common sense and language contain the embedded logic of which there is no escape. These considerations led Smedslund (2008, pp. 158) to propose that the study of psychological phenomena must be mostly conceptual analysis where "understanding is a variable and logicality is an invariant."

Applied in the group context this means that while the epistemic calculus of groups yields shared understandings, or knowledge, that might have the status of knowledge only for the in-group the pathway to knowledge remains invariably similar from a group to another. The explication of the resulting local contradictions and misunderstandings among groups is then an empirical task.

While post-structuralist and postmodern views (e.g. Bourdieu, 1984; for review see Kurzweil, 1980) typically separate discourse from the concepts of *self* and *group*, the approach presented here sees social groups as important sources of meaning and knowledge to the individual. Groups, even in the Internet age, seem to be assigned a significant amount of authority of knowledge, as they are the key components of social interaction.

Taken together, the theoretical contentions made so far point out that the group processes with their practical goals may actually manifest some philosophical normative ideals of reciprocal recognition, free speech and ethics, as envisioned by Jürgen Habermas (1985) in his communicative rationality program and by Axel Honneth (1995; 2000) with his anthropological ethics program. In other words, there are some epistemologically interesting and revealing ideals and contradictions embedded in group practices that deserve to be explicated. Thus, we can begin with the philosophical in our investigation of the epistemological, but we should not end there. A synthesis of the philosophical and empirical is required in the study of knowledge in the social world. Philosophically informed social science is well-equipped to focus empirical research even on a topic as difficult as what knowledge really is. A social scientist needs philosophy in order to understand how people have previously thought of knowledge, as well as to better depict and demarcate important concepts (i.e., reason, truth, beliefs) relating to knowledge.

# 15 Future Research

Drawing from the ideas and results of the current thesis, the following themes come forward as important topics for future research in epistemic group processes:

I Who are the leading epistemic authorities–authorities of knowledge–in our society now? Has the increased relevance of the digitalized world changed the ways people come to hold someone as an authority on knowledge? Often raised assumption is that emerging epistemic authorities are exceptionally good at communicating knowledge to the wider public. However, research reviewed throughout the dissertation suggests that epistemic authority is primarily tied to the social relevance of those held as authorities. The classic notion of idiosyncrasy credit (Hollander, 1958; 2006) still holds promise as a social psychological approach to future study of the group processes through which new epistemic authorities emerge. For instance, if social closeness is reduced among people, the ability to influence each other's knowledge reduces too.

It has been shown that being emotionally close to others also brings people close epistemically and enables individuals to significantly influence each others' knowledge (Raviv et al., 1990). Raviv and colleagues (1990) demonstrated how parents remain important epistemic authorities for children throughout childhood and adolescence *across* various domains of knowledge, while teachers and friends are viewed as important in *some* domains, depending on the expertise attributed to them.

Increasingly the socially relevant others can be known to us mainly through various (social) media–e.g. Internet chat rooms, Facebook and Twitter groups, magazines and television shows–as was seen in the study on public's interest in science (article IV). Yet as recent research (Noar et al., 2014) contends, such distant and even virtual authorities can become significant epistemic leaders in social groups that may never have any direct social contact with the source of authority. The extent and prevalence of this phenomenon are interesting venues for future research. Celebrities and idols, research suggests, can be powerful and influential epistemic authorities (Beck et al., 2014; Erdogan, 1999). Here, an interesting question is whether these authorities gain domain-general

epistemic leadership as we know exists in more traditional and familial contexts.

II National parliaments need knowledge to make reasoned decisions. These decisions shape societies and fundamentally influence our lives. Thus, the function of political groups as epistemic communities in the parliamentary decision making process strikes me as an extremely important topic for future research.

We already know from decades of political behavior research that social identities are central to politics (Huddy, 2003). We also know that in many domains people act in accord with the assumptions of the rational choice theory; try to maximize positive outcomes for oneself (Becker, 1976). Political groups have their specific logic to make decisions. This group logic takes into account the political goals, issues of political relevance, political images and other strategic outcomes that are important for the group but also transcend the boundaries of the group to the society at large. Therefore, political group logic is not only rational for the individual political agent (Becker, 1976) but must be also epistemologically sound for the constituents and some substantial portion of the wider public.

These considerations are very timely since the role of knowledge is much emphasized in working towards better governance, increasing trustworthiness of the political elite processes from the constituents' viewpoint and in increasing the general interest in voting (see Academy of Finland, 2009, pp. 73-79). To what extent, then, national level parliamentary groups are guided by *knowledge* in their decisions and views which compete with rival parties and rival arguments?

Initially, drawing on the concept of the epistemic calculus of groups it seems likely that in-group solidarity steps into the parliamentary political decision-making processes through a type of psycho-logic of groups. Political group psycho-logic–the building blocks of a group epistemology–creates a rational basis for political decision-making that is sensitive to the worthiness of the group's goals but the group logic may be at times

paradoxically insensitive to other epistemically sound options that also build on the logical validity of propositions (i.e., scientific reports that challenge the group's view). Yet, upon explication it may become feasible to see why a group argument can be logically equally reasonable with a competing and sound logical counter-argument.

An application of Smedslund's (1988; 2012) psycho-logic and the epistemic calculus of groups may be used to explicate some of the (axiomatic) reasons for the difficulties of academic research to become political knowledge, too. In future research, it would be compelling to combine conceptual and empirical explication (i.e., interviews of the party rank and file and the Members of Parliament) of political group logic to illuminate the constraints and possibilities that *knowledge* can attain in a particular decision-making process.

# 16 References


Academy of Finland. (2009). In *The state and quality of scientific research in Finland. Publication of the Academy of Finland 9/09*. Retrieved from `http://www.aka.fi/Tiedostot/Tiedostot/Julkaisut/` (29.1.2015).

Ahola, S. (2009). Measurement issues in studying personal epistemology. *Psychology & Society 2* (2): 184-191.

Annas, J. (1993). *The morality of happiness*. Oxford: Oxford University Press.

Annas, J. (2004). Happiness as achievement. *Daedalus 133* (2), 44–51.

American Time Use Survey. (2013). In *Bureau of Labor Statistics, United States Department of Labor*. Retrieved from `http://www.bls.gov/news.release/atus.nr0.htm` (2.9.2014).

Asch, S. (1958). Effects of group pressure on the modification and distortion. In E. E. Maccoby, T. M. Newcomb, & E. L. Hartley (Eds.), *Readings in Social Psychology*. New York: Holt, Rinehart, & Winston.

Audi, R. (2010). *Epistemology: A contemporary introduction to the theory of knowledge*. New York, NY: Routledge.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Bargh, J. A. , Chen, M. & Burrows, L. (1996). Automaticity of Social Behavior: Direct Effects of Trait Construct and Stereotype Activation on Action. *Journal of Personality and Social Psychology 71* (2), 230-244.

Bar-Tal, D. & Bar-Tal, Y. (1988). A new perspective for social psychology. In D. Bar-Tal & A. W. Kruglanski (Eds.), *The Social Psychology of Knowledge* (pp. 83-108). Cambridge University Press.

Beck, C. S., Aubuchona, S. M., McKenna, T. P., Ruhl, S., & N. Simmons. (2014). Blurring Personal Health and Public Priorities: An Analysis of Celebrity Health Narratives in the Public Sphere. *Health Communication 29* (3), 244-256.

Becker, G. S. (1976). *The Economic Approach to Human Behavior*. Chicago.

Benson, R. (2009). Shaping the public sphere: Habermas and beyond. *The American Sociologist 40* (3), 175-197.

Bergin, L. (2001). The role of truth when communicating knowledge across epistemic difference. *Social Epistemology 15* (4), 367-378.

Bergman, M. (2009). Experience, Purpose, and the Value of Vagueness: On C. S. Peirce's Contribution to the Philosophy of Communication. *Communication Theory 19* (3), 248-277.

Bloor, D. (1976). *Knowledge and social imagery*. London: Routledge and Kegan Paul.

Bourdieu, P. (1984). *Distinction; A Social Critique of the Judgment of Taste*. Cambridge: Harvard.

Brandom, R. (1994). *Making It Explicit*. Cambridge, Mass.: Harvard University Press.

Brandom, R. (2000). *Articulating Reasons*. Cambridge, Mass.: Harvard University Press.

Bucholz, M. & Hall, K. (2005). Identity and interaction: A sociocultural linguistic approach. *Discourse Studies 7*(4–5), 585-614.

Bugental, D. B. (2000). Acquisition of the algorithms of social life: A domain-based approach. *Psychological Bulletin 26*, 187-209.

Carnap, R. (1937) *The Logical Syntax of Language*. London: Trench, Trubner & Co., Ltd.

Chaiken, S. & Trope, Y. (1999). *Dual-process theories is social psychology*. New York: Guilford Press.

Cohen, J. & Weimann, G. (2000). Cultivation Revisited: Some Genres Have Some Effects on Some Viewers. *Communication Reports 13* (2), 99.

Cooper, J. (2007). textitCognitive dissonance. 50 years of a classic theory. London: Sage.

Cryan, D., Shatil, S., & Mayblin, B. (2001). *Introducing Logic. A grafic guide*. Malta: Gutenberg Press.

Doise, W. (2001). Human rights studied as normative social representations. In Deaux, K., & Philogene, G. (eds.) *Representations of the social: Bridging theoretical perspectives*, New York: Basil Blackwell, pp. X-X.

Doise, W., Clémence, A. & Lorenzi-Cioldi, F. (1993). *The Quantitative Analysis of Social Representations*. New York: Harvester Wheatsheaf.

Erdogan, B. Z. (1999). Celebrity Endorsement: A Literature Review. *Journal of Marketing Management 15* (4), 291-314.

Esser, F. & Umbricht, A. (2013) Comparing Journalism Cultures. In Esser, F., Hanitzsch, T. (eds.) *The Handbook of Comparative Communication Research*, London, New York, NY: Routledge, pp. 262-275.

Fallis, D. (2007). Collective epistemic goals. *Social Epistemology 21* (3), 267-80.

Fallis, D. & Mathiesen, K. (2013). Veritistic Epistemology and the Epistemic Goals of Groups: A Reply to Vähämaa. *Social Epistemology 27* (1), 21-25.

Festinger, L. (1957). *A Theory of Cognitive Dissonance*. Stanford, CA: Stanford University Press.

Festinger, L., Riecken, H. & Schachter, S. (1956). *When Prophecy Fails. A social and psychological study of a modern group that predicted the destruc-*

*tion of the world*. Minneapolis: University of Minnesota Press.

Fodor, J. A. (1987). *Psychosemantics: The problem of meaning in the philosophy of mind*. Cambridge, MA: MIT Press.

Fredrickson, B. (2009). *Positivity*. New York, NY: Crown.

Fuller, S. (1988) *Social epistemology*. Bloomington, IN: Indiana University Press.

Fuller, S. (2002). *Social epistemology*. Bloomington, IN: Indiana University Press.

Fuller, S. (2013). What Does It Mean to be an Intellectual Today? An Interview with Steve Fuller by Filip Šimetin Šegvić. *Social Epistemology Review and Reply Collective 2* (10), 12-17.

Gerbner, G. (1970). Cultural Indicators: The Case of Violence in Television Drama. *Annals of the American Academy of Political and Social Science, Political Intelligence for America's Future 388*, 69-81

Gerbner, G., Gross, L., Jackson-Beeck, M., Jeffries-Fox, S. & Signorielli, N. (1978). Cultural indicators violence profile no. 9. *Journal of Communication, 28* (3), 176-207.

Gerbner, G., Gross, L., Morgan, M. & Signorielli, N. (1986). Living with television: The dynamics of the cultivation process. In J. Bryant and D. Zillman (Eds.), *Perspectives on media effects*, (pp. 17-40). Hilldale, NJ: Lawrence Erlbaum.

Goldman, A. I. (1999). *Knowledge in a Social World*. Oxford: Clarendon Press.

Goldman, A. (2010). *Social Epistemology*, The Stanford Encyclopedia of Philosophy (Summer 2010 Edition), Edward N. Zalta (ed.), Retrieved from `http://plato.stanford.edu/archives/sum2010/entries/epistemology-social/` (10.1.2015.)

Gross, S. R., Holtz, R., & Miller, N. (1995). Attitude certainty. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences*, (pp. 215-246). Mahwah, NJ: Lawrence Erlbaum.

Haack, S. (1978). *Philosophy of Logics.* Cambridge University Press.

Haas, P. (1992) Introduction: epistemic communities and international policy coordination. *International Organization, 46*(1), 1-35.

Habermas, J. (1962, 1989). *Strukturwander der öffentlichkeit: Untersuchungen zu einer Kategorie der burgerlichen Gesellschaft*, Neuwied, Berling: Luchterhand. *Translated as The structural transformation of the public sphere: An inquiry into a category of bourgeois society*, Cambridge, Mass.: MIT Press.

Habermas, J. (1984). *The theory of communicative action. Reason and the rationalization of society. Vol. 1.* London: Heinemann.

Habermas, J. (1985). *Der philosophische Diskurs der Moderne.* Frankfurt am Main: Suhrkamp.

Habermas, J. (1994). *The Past as Future.* (Interviewed by M. Haller, translated and edited by M. Pensky). Cambridge: Polity Press.

Habermas, J. (1998). *On the pragmatics of communication* (B. Fultner, Trans.). (Collected from various German sources) Cambridge, MA: MIT Press.

Halonen, I. (1997). Logiikka ja rationaalisuus. In I. Niiniluoto & I. Halonen (Eds.), *Järki.* Helsinki: Yliopistopaino.

Hollander, E. (1958). Conformity, status, and idiosyncrasy credit. *Psychological Review, 65*(2), 117-127.

Hollander, E. (2006). Influence processes in leadership-followership: inclusion and the idiosyncrasy credit model. In D. A. Hantula (Ed.), *Advances in Social and Organizational Psychology: a Tribute to Ralph Rosnow*, (pp. 293-312). Mahway, NJ: Lawrence Erlbaum Associates.

Honneth, A. (1995). *The Struggle for Recognition. The Moral Grammar of Social Conflicts*. Cambridge: Polity Press.

Honneth, A. (2000). The Possibility of a Disclosing Critique of Society: The Dialectic of the Enlightenment in Light of Current Debates in Social Criticism. *Constellations, 7*(1).

Howarth, C. (2006). A social representation is not a quiet thing: exploring the critical potential of social representations theory. *British Journal of Social Psychology, 45*(1), 65-86.

Huddy, L. (2003). Group Identity and Political Cohesion. In D. O. Sears, L. Huddy, L., & R. Jervis (Eds.), *Oxford Handbook of Political Psychology*, (pp. 511-558). New York: Oxford University Press.

Jones, M. D., & Song, G. (2014). Making Sense of Climate Change: How Story Frames Shape Cognition. *Political Psychology, 35*(4), 447-476.

Kauppinen, A. (2007). *Essays in Philosophical Moral Psychology*. Helsinki: Helsinki University Print.

King, P.M. & Kitchener, K.S. (1994). *Developing Reflective Judgment*. San Francisco: Jossey-Bass Publishers.

King, P.M. & Kitchener, K.S. (2002). The reflective judgment model: Twenty years of research on epistemic cognition. In B. K. Hofer and P. R. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing*, (pp. 37-61). Mahway, NJ: Lawrence Erlbaum, Publisher.

Knorr-Cetina, K. (1999). *Epistemic Cultures: How the Sciences Make Knowledge*. Harvard University Press.

Kitcher, P. (2002). Veritistic value and project of social epistemology. *Philosophy and Phenomenological Research, 64*(1), 191–198.

Kosko, B. (1993). *Fuzzy thinking: the new science of fuzzy logic*. New York: Hyperion.

Krech, D., & Crutchfield, R. C. (1948). *Theory and problems of social psychology*. New York: McGraw-Hill.

Kruglanski, A. W. (1988). Knowledge as a social psychological construct. In D. Bar-Tal & A. W. Kruglanski (Eds.), *The Social Psychology of Knowledge*, (pp. 109-141). Cambridge: Cambridge University Press.

Kruglanski, A. W. (1989). *Lay Epistemics and Human Knowledge: Cognitive and Motivational Bases*. New York: Plenum.

Kruglanski, A. W, Pierro, A., Mannetti, L., & De Grada, E. (2006) Groups as Epistemic Providers: Need for Closure and the Unfolding of Group-Centrism. *Psychological Review, 113* (1), 84-100.

Kruglanski, A. W., Orehek, E., Dechesne, M., & Pierro, A. (2010) Lay Epistemic Theory: The Motivational, Cognitive, and Social Aspects of Knowledge Formation. *Social and Personality Psychology Compass, 4* (10), 939-950.

Kunelius, R. (2012). Varieties of Realism. Durban Editorials and the Discursive Landscape of Global Climate Politics. In E. Eide & R. Kunelius (Eds.), *The Media Meets Climate. The Global Challenge for Journalism*, (pp. 31-48). Göteborg: Nordicom.

Kurzweil, E. (1980). *The Age of Structuralism; Levi-Strauss to Foucault*. New York: Columbia University Press.

Lai, V. T., Hagoort, P., & Casasanto, D. (2012). Affective primacy vs. cognitive primacy: Dissolving the debate. *Frontiers in Psychology, 3*, 243.

LeDoux, J. E. (1995). EMOTION: Clues from the brain. *Annual Review of Psychology, 46*, 209-235.

Leeman, R. F., Fischler, C., & Rozin, P. (2011). Medical doctorsÕ attitudes and beliefs about diet and health are more like those of their lay countrymen (France, Germany, Italy, UK and USA) than those of doctors in other countries. *Appetite, 56* (3), 558-563.

Leiserowitz, A. (2006). Climate change risk perception and policy preferences: The role of affect, imagery and values. *Climatic Change, 77*, 45-72.

Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Welch, E. (2001). Risk as feelings. *Psychological Bulletin, 127*, 267-286.

Luszczynska, A., & Schwarzer, R. (2005). Social cognitive theory. In M. Conner & P. Norman (Eds.), *Predicting health behaviour*, (pp. 127-169). Buckingham: Open University Press.

Martin, R., Hewstone, M. & Martin, P.Y. (2007). Systematic and heuristic processing of majority- and minority-endorsed messages: The effects of varying outcome relevance and "levels of orientation" on attitude and message processing. *Personality and Social Psychology Bulletin, 33*, 43-56.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50* (4), 370-96.

Maslow, A. H. (1954). *Motivation and personality*. New York, NY: Harper.

Maurer, P., & Vähämaa, M. (2014). Methods and Challenges of Comparative Surveys of Political Communication Elites. In B. Pfetsch (Ed.), *Political Communication Cultures in Europe. Attitudes of Political Actors and Journalists in Nine Countries* (pp. 57-75). New York: Palgrave Macmillan.

Merton, R. K. (1949). *Social theory and social structure*. New York: Free Press.

Moring, T. (1989). *Political Elite Action: Strategy and Outcomes*. Helsinki: Societas Scientiarum Fennica.

Moring, T. & Pfetsch, B. (2014). European Political Communication Cultures and Democracy. In B. Pfetsch (Ed.), *Political Communication Cultures in Europe. Attitudes of Political Actors and Journalists in Nine Countries* (pp. 287-301). New York: Palgrave Macmillan.

Morton, T. A., Haslam, S. A., Postmes, T. & Ryan, M. K. (2006) We value what values us: The appeal of identity-affirming science. *Political Psychology*

*27*(6), 823–838.

Moscovici, S. (1961). *La psychanalyse, son image et son public*. Paris: Presses universitaires de France.

Moscovici, S. (1973). Introduction. In C. Herzlich (Ed.), *Health and illness: A social-psychological analysis* (pp. ix-xiv). London: Academic Press.

Moscovici, S. (1981). On Social Representations. In J. P. Forgas (Ed.), *Social Cognition. Perspectives on Everyday Understanding*, European Monographs in Social Psychology 26 (pp. 181-209). London: Academic Press.

Moscovici, S. & Markova, I. (1998). Presenting Social Representations: A conversation. *Culture and Society 4* (3): 371–410.

Niiniluoto, I. (1996). Tunne ja tieto. In I. Niiniluoto, & I. Räikkä (Eds.), *Tunteet* (pp. 109-117). Helsinki: Helsinki University press.

Nisbet, M. C., & Kotcher, J. E. (2009) A two-step flow of influence? Opinion-leader campaigns on climate change. *Science Communication 30* (3), 328–354.

Nisbett, R. E. & Wilson, T. D. (1977). Telling More Than We Can Know: Verbal Reports on Mental Processes. *Psychological Review 84*, 231–259.

Noar, S. M., Willoughby, J. F., Myrick, J. G., & J. Brown. (2014). Public Figure Announcements About Cancer and Opportunities for Cancer Communication: A Review and Research Agenda. *Health Communication 29* (5), 445-461.

Noelle-Neuman, E. (1974). The spiral of silence: a theory of public opinion. *Journal of Communication 24*: 43–51.

Pajares, F. & Miller, M. (1994). Role of self-efficacy and self-concept beliefs in mathematical problem solving: a path analysis. *Journal of Educational Psychology 6*, 193-203.

Perry, W. G. (1970). *Forms of Intellectual and Ethical Development in*

*the College Years – A Scheme*. New York: Holt, Rinehart and Winston.

Pelham, B. W., Mirenberg, M. C. & Jones, J. K. (2002). Why Susie Sells Seashells by the Seashore: Implicit Egotism and Major Life Decisions. *Journal of Personality and Social Psychology 82*, 469–487.

Petty, R.E. & Cacioppo J.T (1986) *Communication and persuasion: Central and peripheral routes to attitude change*. New Yor: Springer.

Petty, R.E. & Wegener, D.T. (1999) The elaboration likelihood model: Current status and controversies. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 41-72). New York: Guilford Press.

Pfetsch, B. (Ed.). (2014). *Political Communication Cultures in Europe. Attitudes of Political Actors and Journalists in Nine Countries.* New York: Palgrave Macmillan.

Pfetsch, B., Mayerhöffer, E. & Moring, T. (2014). National or Professional? Types of Political Communication Culture across Europe. In B. Pfetsch (Ed.), *Political Communication Cultures in Europe. Attitudes of Political Actors and Journalists in Nine Countries* (pp. 76-104). New York: Palgrave Macmillan.

Piaget, J. (1972). *The Principles of Genetic Epistemology*. New York: Basic Books.

Pickering, A. (1984). *Constructing Quarks: A Sociological History of Particle Physics*. Chicago: University of Chicago Press.

Pirttilä-Backman, A-M. (1993). *The Social Psychology of Knowledge Reassessed: Towards a New Delineation of the Field with Empirical Substantion*. (Annales Academia Scientiarum Fennicae. Dissertationes Humanarum Litterarum 68). Helsinki: Suomalainen Tiedeakatemia.

Pirttilä-Backman, A-M. & Hakanen, H. (1994). Luomiskertomus ja evoluutio nykysuomalaisen maailmankuvan elementteinä. In A-M. Pirttilä-Backman & K. M. Vesala (Eds.), *Kognitioista maailmankuvan ulottuvuuksiin*, (pp. 39-83). Helsinki: Yliopistopaino.

Pirttilä-Backman, A-M. & Kajanne, A. (2001). The development of implicit epistemologies during early and middle adulthood. *Journal of Adult Development 8* (2), 81-97.

Postmes, T., & Branscombe, N. (2010). Sources of social identity. In T. Postmes & N. Branscombe (Eds.), *Rediscovering Social Identity: Core Sources*, (pp. 1-12). Psychology Press.

Ramirez, M. D., & Erickson, N. (2014). Partisan Bias and Information Discounting in Economic Judgments. *Political Psychology, 35* (3), 401-415.

Raviv, A., Bar-Tal, D., Raviv, A., & Houminer, D. (1990). Development in children's perception of epistemic authorities. *British Journal of Developmental Psychology*, (8), 157-169.

Remedios, F. (2003). *Legitimizing scientific knowledge: an introduction to Steve Fuller´s social epistemology*. Oxford: Lexington Books.

Rouse, J. (2002). *How Scientific Practices Matter: Reclaiming Philosophical Naturalism*. Chicago: University of Chicago Press.

Rutchick, A. M., Hamilton D. L. & Sack J. D. (2008). Antecedents of entitativity in categotically and dynamically construed groups. *European Journal of Social Psychology 38*: 905-921.

Sakki, I. (2010). *A Success Story or a Failure? Representing the European Integration in the Curricula and Textbooks of Five Countries*. Helsinki: Yliopistopaino.

Scruton, R. (1980). Emotion, Practical Knowledge and Common Culture. In A. O. Rorty (Ed.), *Explaining Emotions* (pp. 519-536). Berkely: University of California Press.

Sherif, M., Harvey, O. J., White, B. J., Hood, W. R., & Sherif, C. W. (1961). *Intergroup conflict and cooperation: The Robbers Cave experiment (Vol. 10).* Norman, OK: University Book Exchange.

Sjöberg, L. (2007). Emotions and risk perception. *Risk Management 9* (4): 223-37.

Skirbekk, G. & Gilje, N. (2001). *A history of Western thought: From ancient Greece to the twentieth century.* London: Routledge.

Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. (2004). Risk as analysis and risk as feelings: Some thoughts about affect, reason, risk and rationality. *Risk Analysis, 24*, 311?322.

Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2007). The affect heuristic. *European Journal of Operational Research, 177*, 1333-1352.

Smedslund, J. (1988). *Psycho-Logic.* New York: Springer-Verlag.

Smedslund, J. (1997). *The structure of psychological common sense.* Mahwah, NJ: Erlbaum.

Smedslund, J. (2008). From Heider to psycho-logic. *Social Psychology 39*(3), 157-162.

Smedslund, J. (2012). Psycho-logic: Some thoughts and after-thoughts. *Scandinavian Journal of Psychology 53*, 295-302.

Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and intergroup behavior. *European Journal of Social Psychology, 1*, 149-178.

Tajfel, H. (1982). Social psychology of intergroup relations. In M. R. Rosenweig & L. W. Porter (Eds.), *Annual review of psychology* (pp. 1-39). Palo Alto, CA: Annual Reviews.

Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behaviour. In S. Worchel & W. G. Austin (Eds.), *Psychology of Intergroup Relations* (pp. 7–24). Chicago, IL: Nelson-Hall.

Tindale, R. S., Kameda, T., & Hinsz, V. B. (2003). Group decision making. In J. Cooper & M. Hogg (Eds.) *Sage Handbook of Social Psychology*

(pp. 381 - 403).

Turner, J. C. (1982). Towards a cognitive redefinition of the social group. In H. Tajfel (Ed.), *Social Identity and Intergroup Relations*. Cambridge: Cambridge University Press.

Van der Linden, S. (2014). Special issue article: The social psychology of climate change. On the relationship between personal experience, affect and risk perception: The case of climate change. *European Journal of Social Psychology 44* (5), 413-513.

Vähämaa, M., & Härmälä, K. (2011). Comparing perceptions of mathematics: Norwegian and Finnish university students' definitions of mathematics. *Nordic Studies in Mathematics Education 16* (4), 100-111.

Vähämaa, M. (2013a). Groups as epistemics communities: social forces and affect as antecedents to knowledge. *Social Epistemology 27* (1), 3-20.

Vähämaa, M. (2013b). A Group Epistemology is a Group Necessity A Reply to Fallis and Mathiesen. *Social Epistemology 27* (1), 26-31.

Vähämaa, M. (2013c). Secrets, Errors and Mathematics: Reconsidering the Role of Groups in Social Epistemology. *Social Epistemology Review and Reply Collective 2* (9), 36-51.

Vähämaa, M., & West, M. D. (2014). The Dilemma of Group Membership in the Internet Age: Public Knowledge as Preferred Misinformation. *Javnost: The Public 21* (1), 5-18.

Vähämaa, M., & West, M. D. (2015). "They Say One Thing and Mean Another" – How Differences in In-Group Understandings on Key Goals Shape Political Knowledge: An International Comparison of Politicians and Journalists. *Nordicom Review*, forthcoming.

Wason, P. C. (1966). Reasoning. In B. M. Foss (Ed.), *New horizons in psychology*. Harmondsworth: Penguin.

West, M. D. (2014). Doxastic Involuntarism, Attentional Voluntarism,

and Social Epistemology. *Social Epistemology Review and Reply Collective 3* (5), 37-51.

Whiting, D. (2014). Conceptual Role Sematics. In *Internet Encyclopedia of Philosophy*. Retrieved from `http://www.iep.utm.edu/conc-rol/#H6` (2.9.2014.)

Wide, S. (2009). On the art of being wrong: An essay on the dialectic of errors. *Journal of Philosophy of Education 43* (4), 573-88.

Wierzbicka, A. (1996). *Semantics: Primes and universals*. New York: Oxford University Press.

Wierzbicka, A. (2006). *English*. Oxford: Oxford University Press.

Wilder, D., & Simon, A. F. (1998). Categorical and dynamic groups: Implication for social perception and intergroup behavior. In C. Sedikides, J. Schopler, & C. A. Insko (Eds.), *Intergroup cognition and intergroup behavior* (pp. 27-44). Mahwah, NJ: Erlbaum.

Wray, K. B. (2003). What Really Divides Gilbert and the Rejectionists. *Protosociology 18/19*, 363-376.

Wright, G. H. von (1980). *Freedom and Determination. Acta Philosophica Fennica, Vol. 31 1980: No. 1.* Amsterdam: North-Holland Publishing Company.